# JOHNSON CONTROLS

# Digital Audio
# JDVC Digital Voice Command and Amplifiers Series

## Installation, Programming and Operations Manual

# Fire Alarm System Limitations

*While a fire alarm system may lower insurance rates, it is not a substitute for fire insurance!*

**An automatic fire alarm system**—typically made up of smoke detectors, heat detectors, manual pull stations, audible warning devices, and a fire alarm control panel with remote notification capability—can provide early warning of a developing fire. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire.

The Manufacturer recommends that smoke and/or heat detectors be located throughout a protected premise following the recommendations of the current edition of the National Fire Protection Association Standard 72 (NFPA 72), manufacturer's recommendations, State and local codes, and the recommendations contained in the Guides for Proper Use of System Smoke Detectors, which are made available at no charge to all installing dealers. These documents can be found at http://www.systemsensor.com/html/applicat.html. A study by the Federal Emergency Management Agency (an agency of the United States government) indicated that smoke detectors may not go off in as many as 35% of all fires. While fire alarm systems are designed to provide early warning against fire, they do not guarantee warning or protection against fire. A fire alarm system may not provide timely or adequate warning, or simply may not function, for a variety of reasons:

**Smoke detectors** may not sense fire where smoke cannot reach the detectors such as in chimneys, in or behind walls, on roofs, or on the other side of closed doors. Smoke detectors also may not sense a fire on another level or floor of a building. A second-floor detector, for example, may not sense a first-floor or basement fire.

**Particles of combustion or "smoke"** from a developing fire may not reach the sensing chambers of smoke detectors because:

- Barriers such as closed or partially closed doors, walls, or chimneys may inhibit particle or smoke flow.
- Smoke particles may become "cold," stratify, and not reach the ceiling or upper walls where detectors are located.
- Smoke particles may be blown away from detectors by air outlets.
- Smoke particles may be drawn into air returns before reaching the detector.

The amount of "smoke" present may be insufficient to alarm smoke detectors. Smoke detectors are designed to alarm at various levels of smoke density. If such density levels are not created by a developing fire at the location of detectors, the detectors will not go into alarm.

Smoke detectors, even when working properly, have sensing limitations. Detectors that have photoelectronic sensing chambers tend to detect smoldering fires better than flaming fires, which have little visible smoke. Detectors that have ionizing-type sensing chambers tend to detect fast-flaming fires better than smoldering fires. Because fires develop in different ways and are often unpredictable in their growth, neither type of detector is necessarily best and a given type of detector may not provide adequate warning of a fire.

Smoke detectors cannot be expected to provide adequate warning of fires caused by arson, children playing with matches (especially in bedrooms), smoking in bed, and violent explosions (caused by escaping gas, improper storage of flammable materials, etc.).

**Heat detectors** do not sense particles of combustion and alarm only when heat on their sensors increases at a predetermined rate or reaches a predetermined level. Rate-of-rise heat detectors may be subject to reduced sensitivity over time. For this reason, the rate-of-rise feature of each detector should be tested at least once per year by a qualified fire protection specialist. Heat detectors are designed to protect property, not life.

**IMPORTANT! Smoke detectors** must be installed in the same room as the control panel and in rooms used by the system for the connection of alarm transmission wiring, communications, signaling, and/or power. If detectors are not so located, a developing fire may damage the alarm system, crippling its ability to report a fire.

**Audible warning devices** such as bells may not alert people if these devices are located on the other side of closed or partly open doors or are located on another floor of a building. Any warning device may fail to alert people with a disability or those who have recently consumed drugs, alcohol or medication. Please note that:

- Strobes can, under certain circumstances, cause seizures in people with conditions such as epilepsy.
- Studies have shown that certain people, even when they hear a fire alarm signal, do not respond or comprehend the meaning of the signal. It is the property owner's responsibility to conduct fire drills and other training exercise to make people aware of fire alarm signals and instruct them on the proper reaction to alarm signals.
- In rare instances, the sounding of a warning device can cause temporary or permanent hearing loss.

**A fire alarm system** will not operate without any electrical power. If AC power fails, the system will operate from standby batteries only for a specified time and only if the batteries have been properly maintained and replaced regularly.

**Equipment used in the system** may not be technically compatible with the control panel. It is essential to use only equipment listed for service with your control panel.

**Telephone lines** needed to transmit alarm signals from a premise to a central monitoring station may be out of service or temporarily disabled. For added protection against telephone line failure, backup radio transmission systems are recommended.

**The most common cause** of fire alarm malfunction is inadequate maintenance. To keep the entire fire alarm system in excellent working order, ongoing maintenance is required per the manufacturer's recommendations, and UL and NFPA standards. At a minimum, the requirements of NFPA 72 shall be followed. Environments with large amounts of dust, dirt or high air velocity require more frequent maintenance. A maintenance agreement should be arranged through the local manufacturer's representative. Maintenance should be scheduled monthly or as required by National and/or local fire codes and should be performed by authorized professional fire alarm installers only. Adequate written records of all inspections should be kept.

# Installation Precautions

*Adherence to the following will aid in problem-free installation with long-term reliability:*

**WARNING - Several different sources of power can be connected to the fire alarm control panel.** Disconnect all sources of power before servicing. Control unit and associated equipment may be damaged by removing and/or inserting cards, modules, or interconnecting cables while the unit is energized. Do not attempt to install, service, or operate this unit until manuals are read and understood.

**CAUTION - System Re-acceptance Test after Software Changes:** To ensure proper system operation, this product must be tested in accordance with NFPA 72 after any programming operation or change in site-specific software. Re-acceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring. All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

**This system** meets NFPA requirements for operation at 0-49º C/32-120º F  and at a relative humidity  93% ± 2% RH (non-condensing) at 32°C ± 2°C (90°F ± 3°F).  However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity.  Therefore, it is recommended that this system and its peripherals be installed in an environment with a normal room temperature of 15-27º C/60-80º F.

**Verify that wire sizes are adequate** for all initiating and indicating device loops.  Most devices cannot tolerate more than a 10% I.R. drop from the specified device voltage.

**Like all solid state electronic devices,** this system may operate erratically or can be damaged when subjected to lightning induced transients.  Although no system is completely immune from lightning transients and interference, proper grounding will reduce susceptibility. Overhead or outside aerial wiring is not recommended, due to an increased susceptibility to nearby lightning strikes.  Consult with the Technical Services Department if any problems are anticipated or encountered.

**Disconnect AC power and batteries** prior to removing or inserting circuit boards.  Failure to do so can damage circuits.

**Remove all electronic assemblies** prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all cable entries from the sides or rear.  Before making modifications, verify that they will not interfere with battery, transformer, or printed circuit board location.

**Do not tighten screw terminals** more than 9 in-lbs.  Over-tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.

**This system contains static-sensitive components.** Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body.  Use static suppressive packaging to protect electronic assemblies removed from the unit.

**Follow the instructions** in the installation, operating, and programming manuals. These instructions must be followed to avoid damage to the control panel and associated equipment. FACP operation and reliability depend upon proper installation.

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# FCC Warning

**WARNING:** This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause interference to radio communications. It has been tested and found to comply with the limits for class A computing devices pursuant to Subpart B of Part 15 of FCC Rules, which is designed to provide reasonable protection against such interference when devices are operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user will be required to correct the interference at his or her own expense.

**Canadian Requirements**

This digital apparatus does not exceed the Class A limits for radiation noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

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Send email messages to:

**FireSystems.TechPubs@honeywell.com**

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# Table of Contents

# General Information

## Standards and Other Documents

The Digital Voice Command and Digital Audio Amplifiers Series comply with the following standards:

- NFPA 72 2002 National Fire Alarm Code
- Underwriter Laboratories Standard UL 864
- Underwriter Laboratories of Canada (ULC) ULC-S527-99 Standard of Control Units for Fire Alarm Systems
- Part 15 Class A of the conducted radiated emissions as required by the FCC

The installer should be familiar with the following documents and standards:

**NFPA Standards**
NFPA 72 National Fire Alarm Code

**Underwriter Laboratories**
UL 464 Audible Signaling Appliances
UL 864 Standard for Control Unit and Accessories for Fire Alarm Systems
UL 1481 Power Supplies for Fire Protective Signaling Systems
UL 1638 Visual Signaling Appliances - Private-Mode Emergency and General Utility Signaling
UL 1711 Amplifiers for Fire Protective Signaling Systems
UL 60950 Safety of Information Technology Equipment
UL 1971 Signaling Devices for the Hearing Impaired

**Underwriters Laboratories of Canada (ULC)**
ULC-S527-99 Standard of Control Units for Fire Alarm Systems

**Other**
FCC Part 15 Class A Conducted and Radiated Emissions

## UL 864 Ninth Edition Compliance

This product has been certified to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864 9th Edition.

### Products Subject to AHJ Approval

The following products have not received UL 864 9th Edition certification and may only be used in retrofit applications. Operation of the JDVC Series with products not tested for UL 864 9th Edition has not been evaluated and may not comply with NFPA 72 and/or the latest edition of UL 864. These applications will require the approval of the local Authority Having Jurisdiction (AHJ).

| | |
|---|---|
| IFC-640 Fire Alarm Control Panel | AMG-1 |
| JNCA Network Control Annunciator | XPIQ (NAC applications only) |
| IFC-3030 Fire Alarm Control Panel | |

## Programming Features Subject to AHJ Approval

This product incorporates field-programmable software. The features and/or options listed below must be approved by the local AHJ.

This product incorporates field-programmable software. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864, certain programming features or options must be limited to specific values or not used at all as indicated below.

| Program Feature or Option | Permitted in UL 864? (Y/N) | Possible Settings | Settings Permitted in UL 864 |
|---|---|---|---|
| IP downloads over a local area network (LAN) or the internet (Wide Area Network - WAN) | No | Yes<br>No | No |

# Supplemental Documentation

The table below provides a list of documents referenced in this manual, as well as documents for selected other compatible devices.

| | |
|---|---|
| VeriFire Tools CD help file and CD pamphlet | download from IFC-Fire.com |
| Notifier DVC-AO Audio Option Board Installation Document | 52728 |
| Notifier DVC-KD Keypad Product Installation Document | 52709 |
| Notifier DAA Digital Audio Amplifiers Product Installation Document | 52410 |
| CA-1 Chassis Product Installation Document | 52474 |
| CA-2 Chassis Product Installation Document | 52455 |
| CMIC-1 Product Installation Document | 52476 |
| IFC2-3030 Installation, Programming and Operations Manuals | 52563, 52564, 52565 |
| IFC2-640 Installation, Programming and Operations Manuals | 52835, 52837, 52836 |
| Notifier AMPS-24 Manual | 51907 |
| IFC-640 Installation, Programming, Operations Manuals | 51864, 51866, 51865 |
| IFC-3030 Installation, Programming, Operations Manual | 52024, 52025, 52026 |
| JNCA Network Control Annunciator Manual | 51868 |
| JNCA-2 Network Control Annunciator Manual | 52570 |
| IFW Intelligent Fire Workstation Manual | 52028 |
| Notifier NCM Installation Document | 51533 |
| Noti-Fire-Net Manual | 51584 |
| Johnson ControlsSLC Wiring Manual | 51870 |
| Notifier AA Series Audio Amplifier Manual | 52526 |
| Notifier XPIQ Manual | 51013 |
| Notifier ACS Annunciator Manual | 15842 |
| AFAWS Automatic Fire Alarm Warden Station | 50705 |
| M500FPJ Firephone Control Module | 156-2550 |
| ACT-2 Audio Coupling Transformer | 51118 |
| RM-1 Series Remote Microphones | 51138 |
| CAB-4 Series Cabinets Installation Instructions | 15330 |
| Notifier Audio Fiber Links Document | 52230 |
| RSM-1A Residential Silence Module | 156-006-000 |
| AIM-1A Audible Isolation Module | 156-006-002 |
| Wire Guide Addendum for Digital Audio Loops | 52916ADD |

**Related Documentation Table**

# Cautions and Warnings

This manual contains cautions and warnings to alert the reader as follows:

⚠ **CAUTION:** Information about procedures that could cause programming errors, runtime errors, or equipment damage.

⚡ **WARNING:** Indicates information about procedures that could cause irreversible damage to the control panel, irreversible loss of programming data, or personal injury.

# JDVC Digital Voice Command

## Section 1: JDVC Overview

## 1.1  Description

Each JDVC Series model is a multi-featured audio processor with digital audio functionality that operates as an event-driven audio message generator and router. It is designed for use with the DAA Series digital audio amplifiers in a single panel or networked environment, and may also be used as an analog audio source in retrofit applications. (See Figure 1.1.)

The IFC2-640 and IFC2-3030 may be directly connected to the JDVC for single panel applications. An associated JNCA-2 is required with the IFC2-640 when a DAL (digital audio loop) is part of the configuration. An associated JNCA-2 is *not* required with the IFC2-640 when there is no DAL. Refer to Figure 1.1 for illustrations of single panel configurations.

Network configurations require an associated JNCA-2, and will support all Network Control-by-Event (CCBE) from the following panels: IFC2-640, IFC-640, IFC2-3030, and IFC-3030.

When used with the optional DVC-KD keypad and a JNCA-2 or IFC2-3030, the Digital Command Center serves as an audio command center, accepting live paging from several sources and providing the ability to direct the paging to appropriate pre-programmed speaker zones in the system.

**NOTE:**   The JDVC Series consists of all the model versions listed in the bullets below this note. Individual part numbers are used in this manual only when it is necessary to distinguish features or functions that differ. The term JDVC is used in all other cases.

- JDVC - Digital Voice Command, wire version
- JDVC-EM  - Digital Voice Command, extended memory, wire version
- JDVC-EMF - Digital Voice Command, extended memory, multi-mode fiber version
- JDVC-EMSF - Digital Voice Command, extended memory, single-mode fiber version.

The JDVC-EM Series models listed above each contains up to 32 minutes of standard quality (11.025 KHz sampling rate, 8 bit μ-law, mono) audio storage, or 4 minutes of high quality (44.1 KHz sampling rate, 16 bit PCM, mono). The JDVC model listed above contains up to 16 minutes of standard quality audio storage, or 2 minutes of high quality.

**NOTE:**   The term DAA is used in this manual to refer to all DAA wire and fiber models. Individual part numbers are used only when it is necessary to distinguish features or functions that differ.

Figure 1.1 gives simplified overview illustrations of typical applications for the JDVC Series and its Digital Audio Loop (DAL).

**NOTE:**   A DAL must be connected with one of the following:
                   - All wire connections
                   - All single-mode fiber connections, or
                   - All multi-mode fiber connections.
Wire and fiber, or multi-mode and single-mode, can not be mixed.

**IFC2-3030 Single Panel Applications**

with JDVC and Digital Audio Loop (DAL).
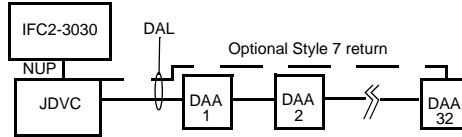
with JDVC, DAL, and DVC-AO for retrofits.
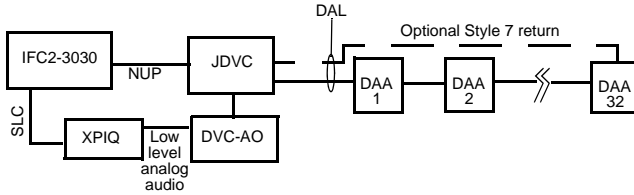
**IFC2-640 Single Panel Applications**

with JDVC and DVC-AO for retrofits. DAL (digital audio loop) not compatible with this application.
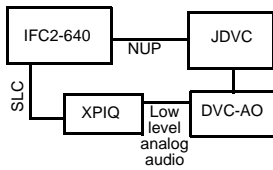
with JDVC, JNCA-2, DAL, and DVC-AO for retrofits.
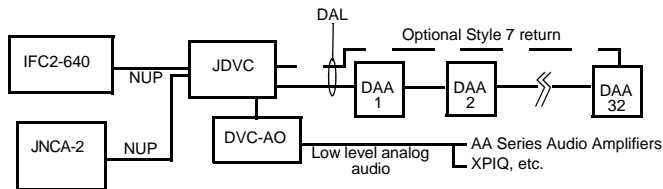
**Networked System**
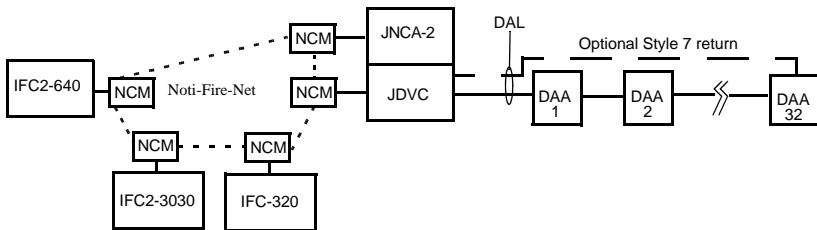
**Retrofit Networked System**
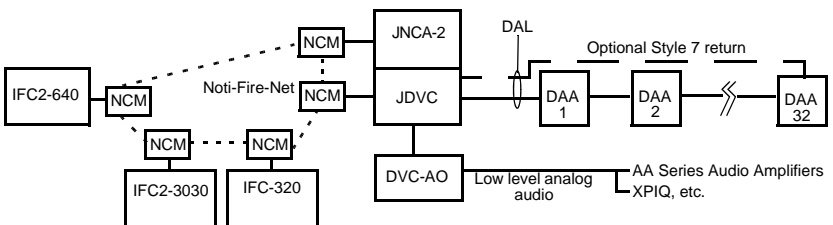
A JNCA, IFC-640, or IFC-3030 with compatible software may be part of the network.

**Figure 1.1  Block Diagrams of JDVC Series Applications**

> **NOTE:**
> Speaker placement must be given careful consideration when planning an audio system.
>
> • Place speakers from different DALs (Digital Audio Loops) so they are not within the audible areas of other DALs.
>
> • Carefully consider the audible range of speakers within a DAL; overlapping audio messages can be confusing.

> **NOTE:**   A maximum of 54 nodes may be used on Noti•Fire•Net when digital audio messages will be broadcast over it.

## 1.1.1  Features

- Programmable from NUP port using VeriFire Tools with:
  - JDVC - Up to 16 minutes of standard quality or 2 minutes of high quality digital audio storage of user-selected/created messages and tones.
  - JDVC-EMs - up to 32 minutes of standard quality or 4 minutes of high quality digital audio storage of user-selected/created messages and tones.
  - Up to 1000 audio sequences.
  - Message prioritization.
  - System configuration parameters.
  - Equations for distribution of messages.
- Digital audio ports for direct connection with up to 32 DAA amplifiers.
- Multiple audio command centers supported within a system.
- DCC (Display and Control Center) capabilities when used with DVC-KD and associated JNCA-2 or IFW.
- FireFighter's Telephone (FFT) Riser, with local telephone handset option.
- Local paging microphone option.
- Remote microphone paging option with RM-1.
- Broad paging functionality when used with DVC-KD via microphone, TELH-1 or FFT, RM-1, AUX A or AUX B inputs.
  - All Call
  - Page Active Evac Areas
  - Page Active Alert Areas
  - Page Inactive Areas
- Auxiliary input for $12V_{p-p}$ analog low-level audio sources.
- Auxiliary input for $1V_{RMS}$, to be used for background music input, an interface with a telephone paging source, or other compatible audio sources.  Includes user audio level adjustment feature.
- Operates as a node on Noti-Fire-Net.
- Functional with IFC2-3030 or IFC2-640 as a standalone system (without Noti-Fire-Net).
- Distribution of one channel of audio on Noti-Fire-Net.
- Eight audio data and five Firefighters Telephone channels on the DAL (Digital Audio Loop).
- Push-to-talk relay.
- Isolated alarm bus input, to be used for backup activation of alarm messages when normal digital communication is lost.

- Meets UL requirements for 800 Hz to 2.8 KHz bandwidth.
  Meets ULC requirements for 400 Hz to 4 KHz bandwidth.

## 1.1.2  Options

### DVC-AO

The DVC-AO audio output board has four low-level analog outputs. It mounts on the JDVC and is compatible with XPIQ, AA-30/E, AA-100/E, and AA-120/E amplifier products.   Refer to Section "Analog Audio Outputs (DVC-AO)" on page 36.

### DVC-KD

The DVC-KD keypad is for local annunciation and controls. Refer to "Using the DVC-KD Keypad" on page 64 and "DVC-KD Keypad" on page 25 for more information on the DVC-KD.

## 1.1.3  Specifications

### 24VDC Power - TB1

24VDC input, 440 mA, alarm or standby, non-resettable, power-limited by the source, non-supervised.

- •If a DVC-KD is attached, add:          60 mA
- • If a DVC-AO is attached, add:        175 mA
- • If an RM-1 is attached, add:          60 mA

  For a possible total of:                  735 mA, alarm or standby

  Recommended wiring: 14-18 AWG twisted-pair. Max. 14 AWG.

### Digital Audio Ports A and B - TB2, TB3

(Refer to Table 1.1, and also to the Wiring Guide Addendum, p/n 52916ADD, for other recommended wire types)

| Cable Type | Maximum Distance between Ports |
|---|---|
| Belden 5320UJ (18 AWG, TP) FPL | 1900 ft (609.6 m) |
| Genesis 4050 (18 AWG, TP) FPL | 1000 ft (305.8 m) |

**Table 1.1  Recommended Digital Audio Port Cable Types**

EIA-485 format.

Power-limited.

### Single- and Multi-mode Fiber-Optic Digital Audio Ports - RXA,TXA, RXB and TXB (J100, J101, J102, and J103)

ST® Style (ST is a registered trademark of AT&T).

Supervised.

Fiber optic cable, multi-mode:50/125 or 62.5125 micrometers.

Fiber optic cable, single-mode:9/125 micrometers.

Attenuation of cabling between two nodes (fiber-optic circuits are point-to-point) must not exceed the Maximum attenuation, specified below.

To determine attenuation:

1. Find the rated dB loss per foot within the cable manufacturer's specifications. Determine the total attenuation between the two nodes due to the cable.

   Loss = (loss/ft.) x (length in feet)

2. Establish the dB loss for each connector and splice. Sum all the losses.

3.  Total the attenuation factors obtained in steps 1 and 2. This will provide an approximate attenuation total. The actual attenuation can be measured end-to-end with fiber-optic industry standard equipment using a test wavelength of 850 nanometers (multimode)/1300 nanometers (single-mode).

    The Maximum attenuation:
    4.2dB for multi-mode with 50/125 micrometer cable @ 850 nm.
    8dB for multi-mode with 62.5/125 micrometer cable @ 850 nm.
    5.0dB for single-mode with 9/125 micrometer cable @ 1300 nm.

### Auxiliary Input A (AUX A) - TB 4

Signal strength from low-level analog audio input (such as background music or telephone paging): $1V_{p-p}$ max. Optional supervision through programming.

Recommended wiring: 18AWG, twisted-pair. Max. 14 AWG.

Supervision programmable.

Auxiliary input source must be within 25 feet (7.6 m) of the JDVC, and in the same room.

### Auxiliary Input B (AUX B) - TB14

Signal strength from low-level analog audio input: $12V_{p-p}$ nominal, $15V_{p-p}$ max. Optional supervision through programming.

Recommended wiring: 14-18 AWG twisted-pair. Max. 14 AWG.

Supervision programmable.

### Remote Microphone Interface - TB9

Recommended wiring: 14-18 AWG twisted-pair. Max. 14 AWG.

Nominal AC signal strength $2.5V_{RMS}$, $3V_{RMS}$ Max.

Power-limited.

Supervised.

Max distance between remote microphone and JDVC: 1000 ft (300 m).

### Push-to-talk Interface - TB10

Dry contact.

Common, non-supervised

Recommended wiring: 14-18 AWG twisted-pair. Max. 14 AWG.

### Alarm Bus - TB12

Power-limited by source.

Non-supervised.

Recommended wiring: 14-18 AWG twisted-pair. Max. 14 AWG.

Requires 16 VDC @ 20mA across the terminals to activate.

### FFT Riser - TB13

Power-limited output.

Max: 15V, 75 mA AC

Supervised.

Class A (Style Z) or Class B (Style Y) operation.

Style Y 2-wire connections require a 3.9k ohm 1/2 watt end-of-line resistor (P/N R-3.9k).

Max. wiring resistance (including individual telephone zone to last handset) permitted is 50 ohms, 10,000 ft. (3048 m) max. wiring distance at 14 AWG to last handset.

### Optional DVC-AO Analog Audio Output Circuits - TB5, TB6, TB7 and TB8

Power-limited outputs.
Signal strength: *Nominal* , $+12V_{p-p}$ AC. *Maximum*, 15V 150 mA AC.
Supervision programmable.
Recommended wiring: 18 AWG max, twisted-pair. Max. 14 AWG.

Max impedence: 66 ohms.
Distance based on impedence.
Class A (Style Z) or Class B (Style Y) operation.

# 1.2 JDVC Board Layout

## 1.2.1 Wire Version

### Connections

Board connections for the JDVC-EM are illustrated and identified in Figure 1.2.
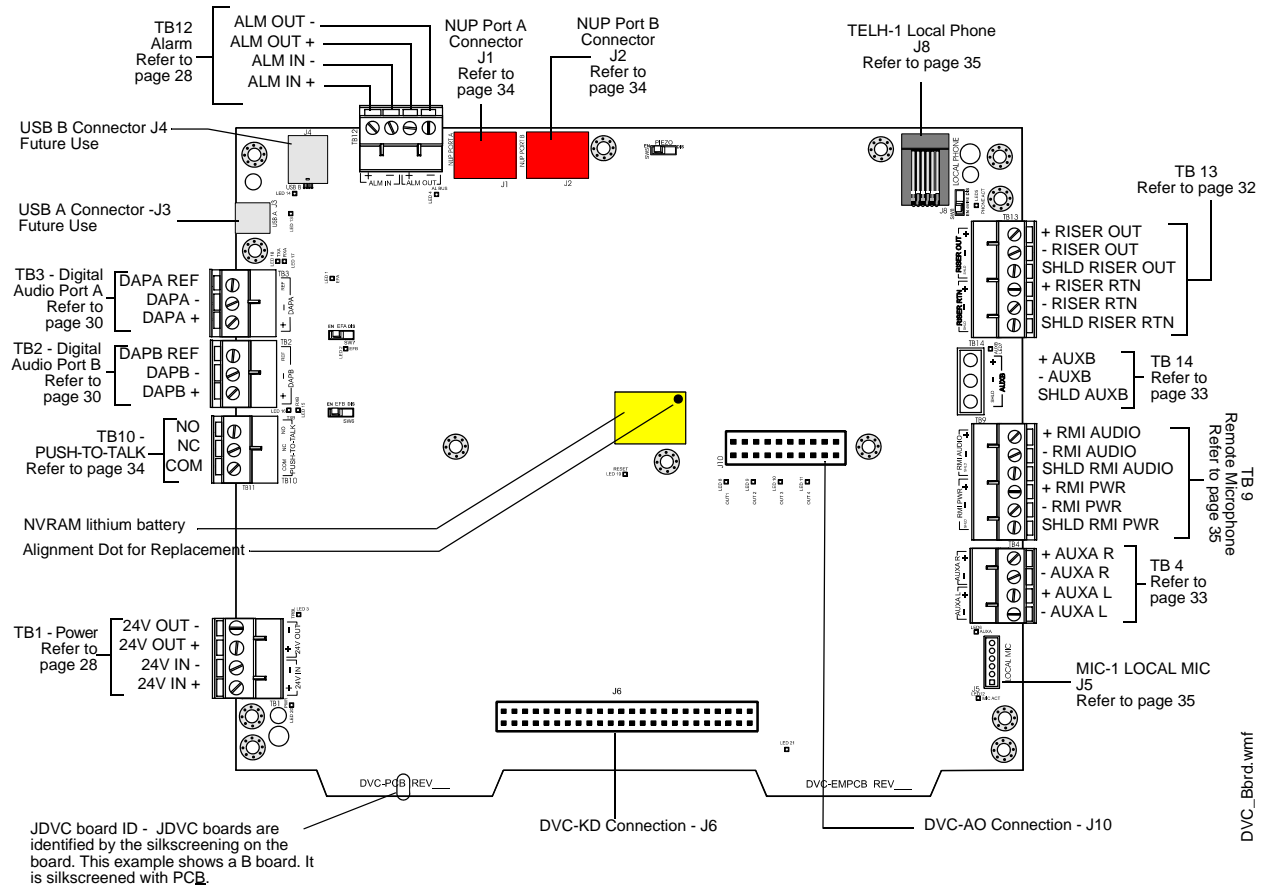


**Figure 1.2 Connections on Wire Version Boards**

## Switches and Indicators

Switches and LED indicator locations on the JDVC-EM are illustrated in Figure 1.3

Switches and Indicators:
Refer to Tables 1.3 and 1.2.
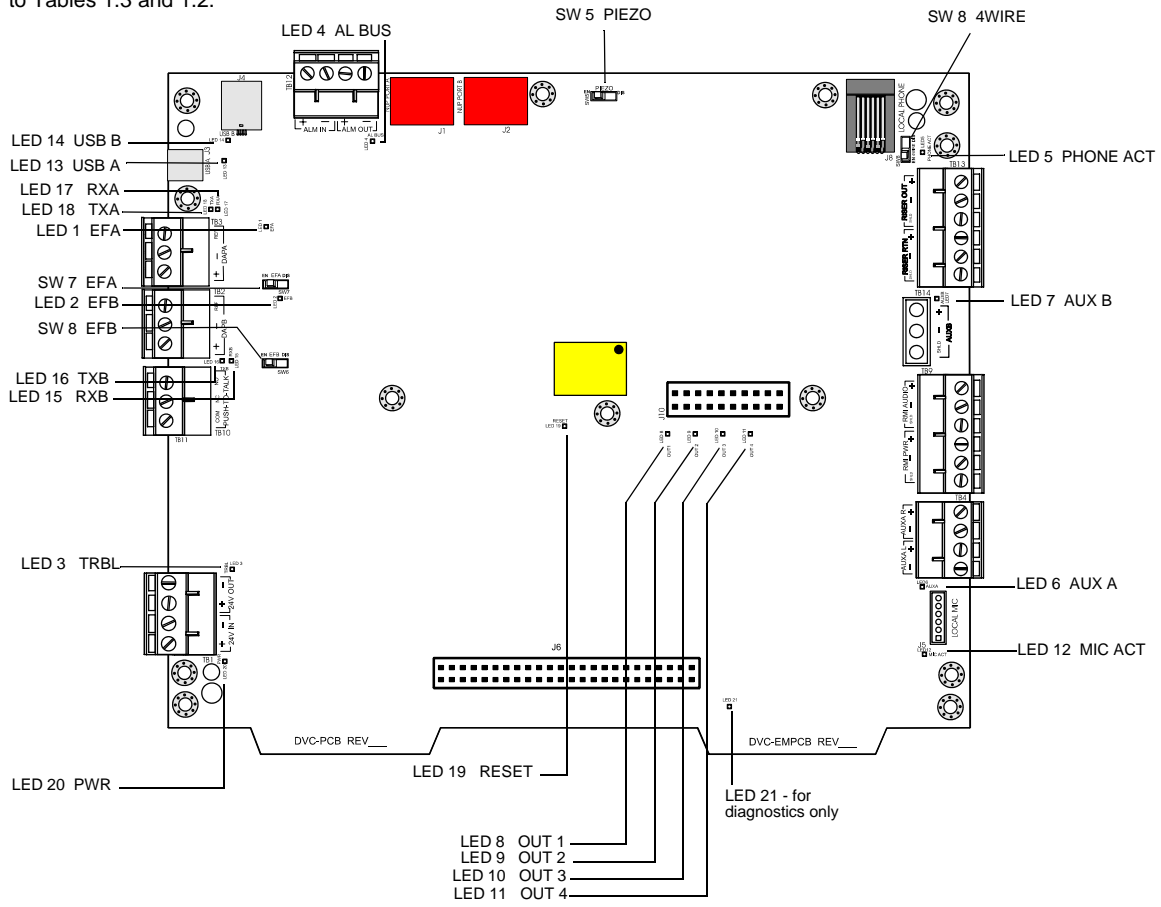


**Figure 1.3  LED Indicator and Switch Locations on Wire Version Boards**

## 1.2.2 Fiber Versions

### Connections

Board connections for the JDVC-EMF and JDVC-EMSF are illustrated and identified in Figure 1.4.
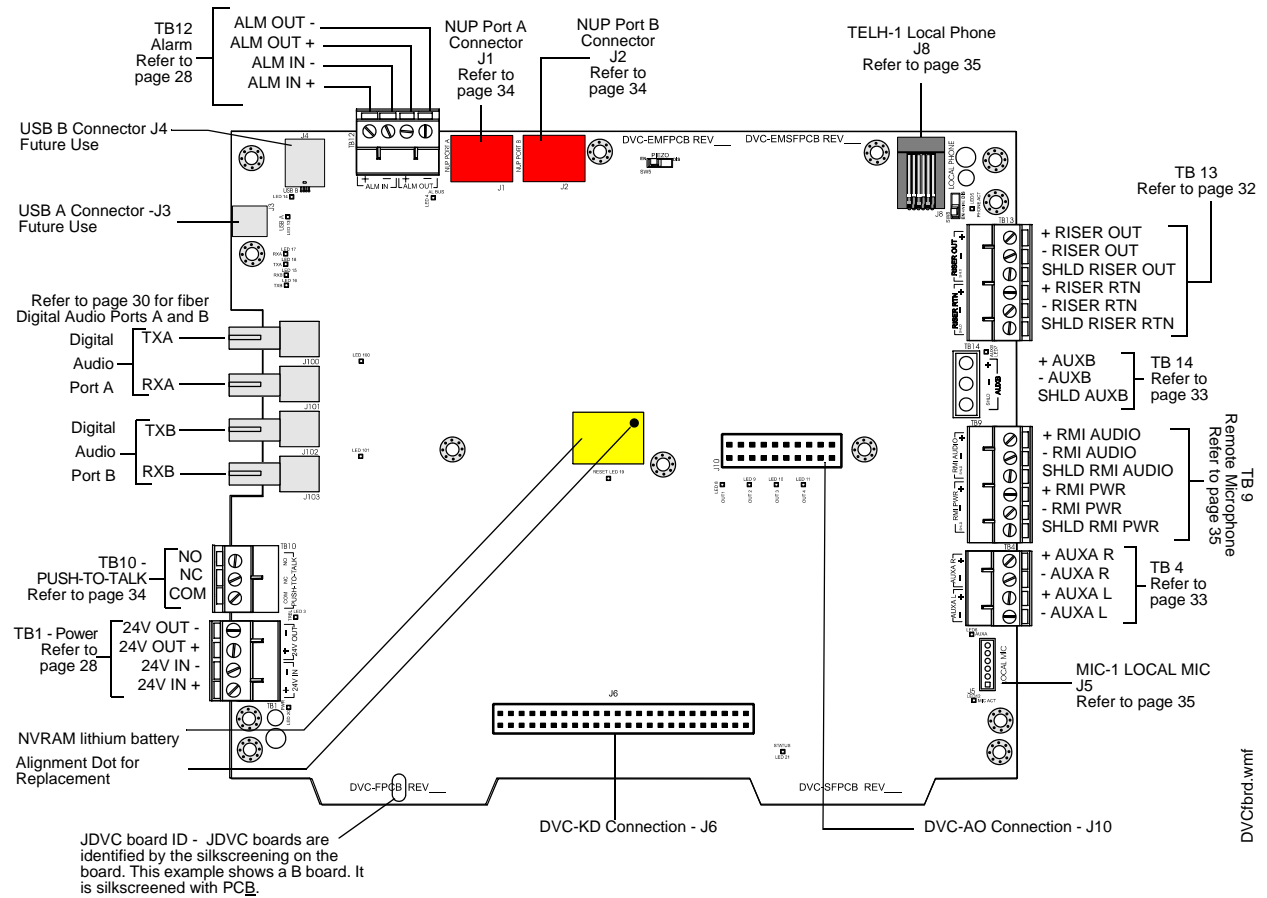


**Figure 1.4  Connectons for Fiber Version JDVC Boards**

### Indicators and Switches

Switches and LED indicator locations on the JDVC-EMF and JDVC-EMSF are illustrated in Figure 1.5.

Switches and Indicators:
Refer to Tables 1.2 and 1.3.
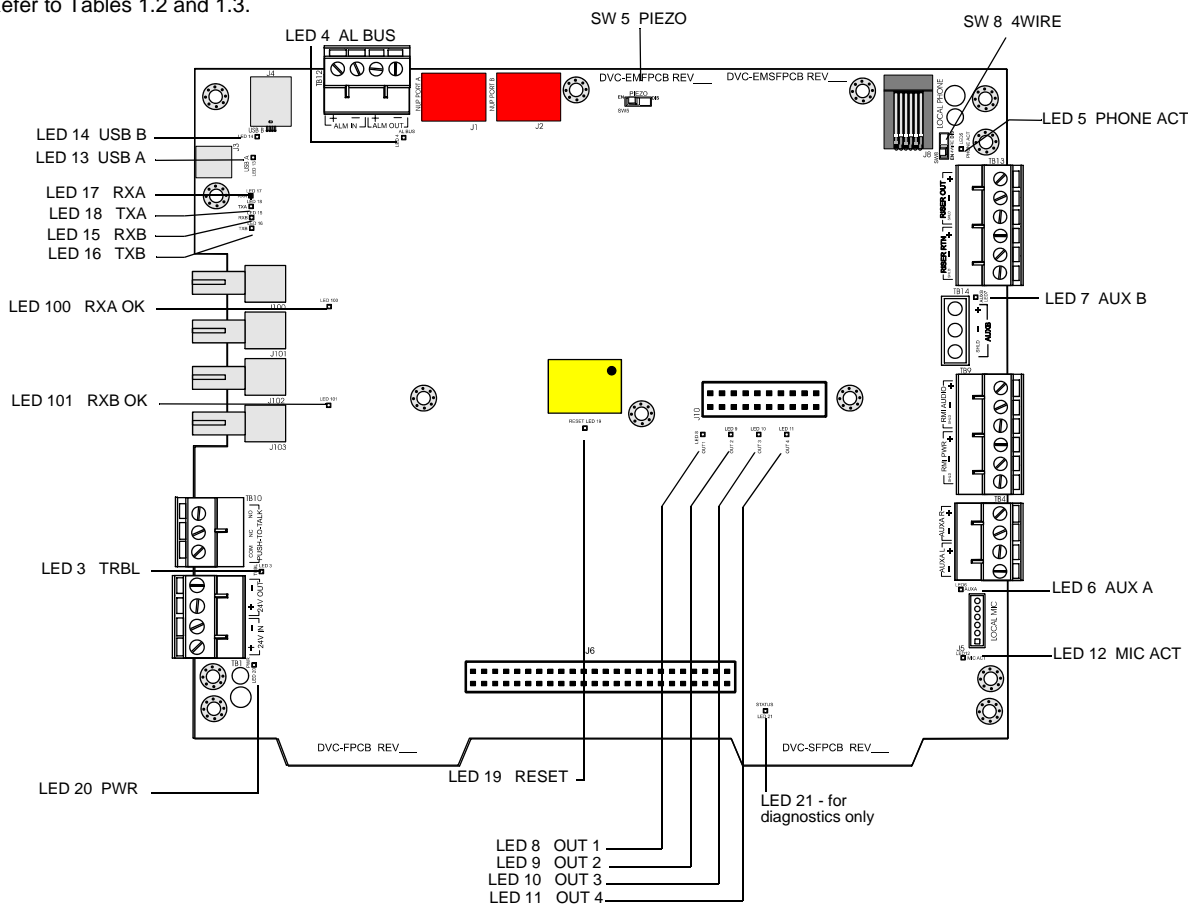


**Figure 1.5  LED Indicator and Switch Locations on Fiber Version Boards**

## 1.2.3  Switch Functions

The switches described in Table 1.2 are for configuration or for diagnostic purposes. All are located as indicated in Figure 1.3 on page 16 or Figure 1.5 on page 18.

| Name | Number | Description | Default |
|------|--------|-------------|---------|
| PIEZO | SW5 | Enable/disable the piezo. | EN (enable/on) |
| EFB | SW6 | Enable/disable Digital Audio Port B earth fault detection. Switch is on wire versions only. | DIS (Disable) |
| EFA | SW7 | Enable/disable Digital Audio Port A earth fault detection. Switch is on wire versions only. | DIS (Disable) |
| 4WIRE | SW8 | Changes FFT Riser indication to 2- or 4-wire, depending on whether the riser is wired Class B or Class A. | 2-wire |

**Table 1.2  JDVC Series Switches**

## 1.2.4  Indicators

There are 18 diagnostic LEDs indicating various conditions and troubles. All are located as indicated in Figure 1.3 on page 16 or Figure 1.5 on page 18.

| LED Name | Color | Description | LED# |
|---|---|---|---|
| EFA | Yellow | Illuminates steadily when an earth fault has been detected at digital audio port DAP A. LED is on wire versions only. | 1 |
| EFB | Yellow | Illuminates steadily when an earth fault has been detected at digital audio port DAP B. LED is on wire versions only. | 2 |
| TRBL | Yellow | Illuminates when a trouble occurs. Blinks for an unacknowledged trouble, illuminates steadily for an acknowledged trouble. | 3 |
| AL BUS | Red | Illuminates steadily while the JDVC's alarm bus input is active. | 4 |
| PHONE ACT | Green | Illuminates steadily while at least one firefighter's telephone is active on a DAA riser. | 5 |
| AUX A | Green | Illuminates steadily while audio is detected on AUX IN A. | 6 |
| AUX B | Green | Illuminates steadily while audio is detected on AUX IN B. | 7 |
| OUT 1 | Green | Illuminates steadily while analog signal is on audio output 1. | 8 |
| OUT 2 | Green | Illuminates steadily while analog signal is on audio output 2. | 9 |
| OUT 3 | Green | Illuminates steadily while analog signal is on audio output 3. | 10 |
| OUT 4 | Green | Illuminates steadily while analog signal is on audio output 4. | 11 |
| MIC ACT | Green | Illuminates steadily while push-to-talk  is activated on the MIC-1 microphone. | 12 |
| USBA | | Future Use. | 13 |
| USBB | | Future Use. | 14 |
| RXB | Green | Illuminated while data is received on Digital Audio Port (DAP) B (wire versions) or RXB (fiber versions).  Illumination will flicker, turning on when activity is detected and off when it is not. | 15 |
| TXB | Green | Illuminated while data is transmitted on Digital Audio Port (DAP) B (wire versions) or TXB (fiber versions).  Illumination will flicker, turning on when activity is detected and off when it is not. | 16 |
| RXA | Green | Illuminated while data is received on Digital Audio Port (DAP) A (wire versions) or RXA (fiber versions).  Illumination will flicker, turning on when activity is detected and off when it is not. | 17 |
| TXA | Green | Illuminated while data is transmitted on Digital Audio Port (DAP) A (wire versions) or TXA (fiber versions).  Illumination will flicker, turning on when activity is detected and off when it is not. | 18 |
| RESET | Yellow | Factory use only. | 19 |
| POWER | Green | Illuminates steadily while local 24V from power supply is present. | 20 |
| N/A | N/A | Factory use only. | 21 |
| RXA OK | Green | Illuminates steadily when there is a successful single- or multi-mode fiber connection on the RXA connector. LED is on fiber versions only. | 100 |
| RXB OK | Green | Illuminates steadily when there is a successful single- or multi-mode fiber connection on the RXB connector. LED is on fiber versions only. | 101 |

**Table 1.3  JDVC Series LED Indicators**

# 1.3 Options

## 1.3.1 DVC-AO Analog Output Board Layout

Refer to "Analog Audio Outputs (DVC-AO)" on page 36 for information on wiring these connections. See Figure 2.3, "Mounting a DVC-AO" on page 24 for information on mounting it onto a JDVC.



**Figure 1.6  DVC-AO Board Layout**
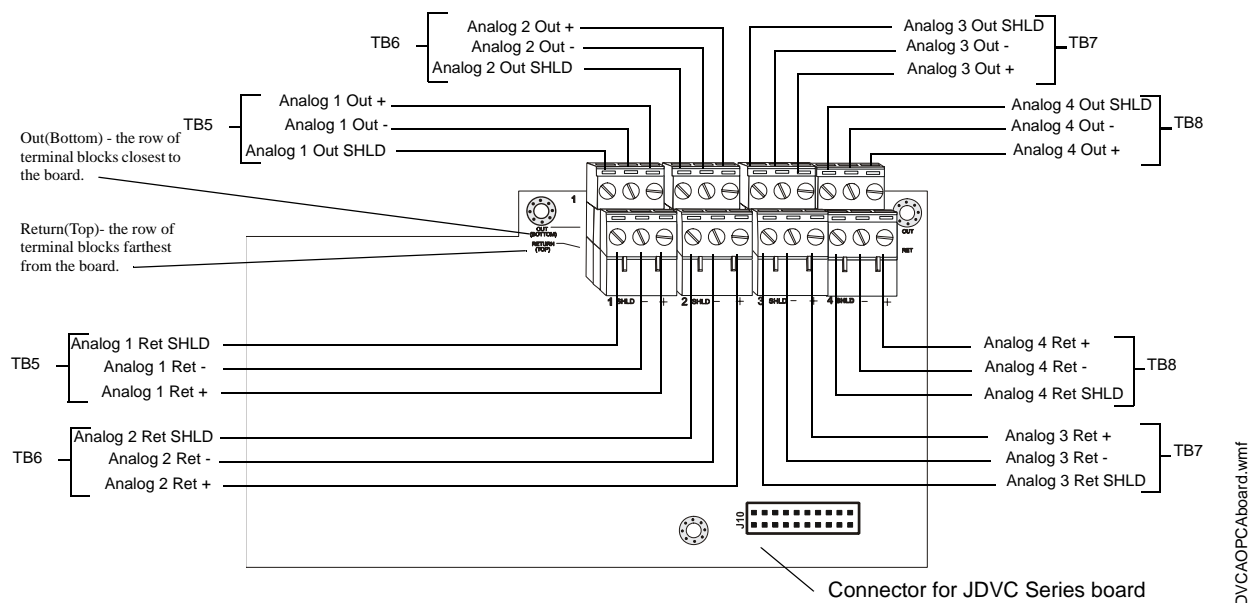
## 1.3.2 DVC-KD Keypad

The DVC-KD is used for paging and message routing functions, with status LEDs for certain functions and 24 user-programmable annunciator-type buttons. Refer to Section 2.5.2 on page 25 for information on mounting the keypad and slide-in labels, and "Using the DVC-KD Keypad" on page 64 for information on the keypad's operation.
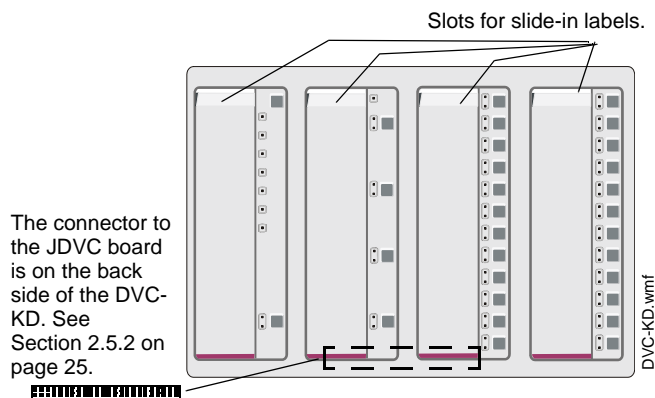


**Figure 1.7  DVC-KD Keypad**

# Section 2: JDVC Installation

## 2.1  Overview

### 2.1.1  Chassis

All the JDVC Series boards will mount in a size B, C or D CAB-4 series cabinet, in either one of the following chassis assemblies:

- CA-2 - This chassis assembly occupies two rows of a CAB-4 series enclosure. The left side accomodates a JDVC Series board mounted on a half-chassis and one IFC2-3030 or JNCA-2 mounted on a half-chassis. The right side houses a microphone and handset well. (Refer to Figure 2.1.)

  A MIC-1 microphone (not pictured) is included with the chassis assembly. A TELH-1 telephone handset may be ordered separately.

- CA-1 - This chassis occupies one row of a CAB-4 series enclosure. The left side accomodates one JDVC Series board, and the right side houses an optional CMIC-1, which consists of a MIC-1 microphone and well.

Half-chassis for IFC2-3030 or JNCA-2.

Half-chassis for JDVC board.

Well for MIC-1 microphone and TELH-1 telephone handset.

CA2chassisassembly.wmf
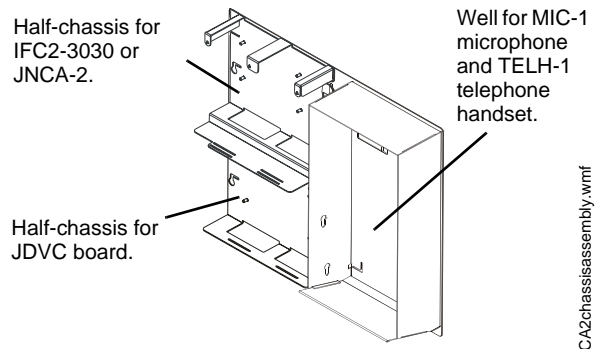
**Figure 2.1  CA-2 Chassis Assembly**

CA-1 Chassis

CMIC-1 microphone and well assembly.

ca1_chassis.wmf
cmic1_in_well.wmf
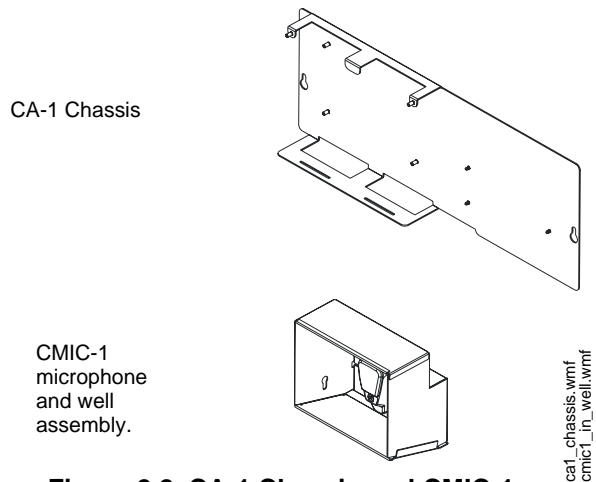
**Figure 2.2  CA-1 Chassis and CMIC-1**

### 2.1.2  Doors and Dress Panels

#### Doors for CA-2 Installations

Doors with clear window space revealing the audio command center components may be ordered for the CAB-B4, CAB-C4 and CAB-D4 enclosures. Add the "R" for red doors/backboxes.

- JADDR-B4/R -This door reveals a CA-2 with IFC2-3030/JNCA-2, JDVC Series board with keypad, and microphone and handset in the two rows of the "B" size cabinet (P/Ns SBB-B4/R).
- JADDR-C4/R - This door reveals the top two rows the same as the JADDR-B4, but also reveals the third row of the "C" size cabinet (P/Ns SBB-C4/R).
- JADDR-D4/R - This door reveals the top three rows the same as the JADDR-C4, but also reveals the fourth row of the "D" size cabinet (P/Ns SBB-D4/R).

### Doors for CA-1 Installations

For CA-1 installations, use standard CAB-4 Series doors based on the cabinet size used. (P/Ns JDR-A4/-A4R/-A4B/-A4BR for "A" size cabinets, JDR-B4/-B4R/-B4B/-B4BR for the "B" size , JDR-C4/-C4R/-C4B/-C4BR for the "C" size, JDR-D4/-D4R/-D4B/-D4BR for the "D" size.

### Dress Panels for CA-2 Installations

The DPA-2B dress panel has an opening revealing the audio command center components in a CA-2 chassis. It covers two rows in any CAB-4 series enclosure.

### Dress Panels for CA-1 Installations

The DPA-1 dress panel has an opening revealing a JDVC Series board and CMIC-1. For applications without a CMIC-1, use a DPA-1A4 to cover the two empty right-hand spaces with blank plates, or fill the right-hand spaces with annunciator or option cards.  The DP-1B blank dress panel may be used to completely cover an installation without a DVC-KD and CMIC-1.

## 2.2  Prepare for Installation

Carefully unpack the equipment and inspect for shipping damage.

Before installation:

- Review the installation precautions at the front of this manual.
- Installers should be familiar with the standards and codes specified in "Standards and Other Documents" on page 8.
- Ensure all wiring will comply with national and local codes.
- Review installation instructions in "Installation Checklist" on page 23.

**WARNING:** Install the system components in the sequence listed below. Failure to do so can damage the components.

**WARNING:** Wear a static discharge strap on wrist to prevent equipment damage.

## 2.3  Installation Checklist

| Task | Refer to: |
|---|---|
| Mount the cabinet backbox to the wall. | "Cabinet" on page 23. |
| Mount the CA-1 or complete CA-2 chassis assembly into the backbox either at this point or after the components have been installed on the chassis. | CA-1 or CA-2 Chassis Product Installation Document. |
| Mount any option boards to the JDVC.<br><br>1.   DVC-AO.<br><br>2.   DVC-KD. | <br><br>1.   Section 2.5.1 on page 24.<br><br>2.   Section 2.5.2 on page 25. |
| Load the CA-1 Chassis<br><br>1.   Optional: Mount an NCM-W/F to the chassis.<br><br>2.   Mount the JDVC in its chassis position.<br><br>3.   Optional: Mount the CMIC-1 microphone and chassis well. | <br><br>1.   Section 2.6 on page 26.<br><br>2.   Section 2.7 on page 26.<br><br>3.   CA-1 or CMIC-1 Product Installation Document. |
| Load the CA-2 Chassis<br><br>1.   Optional: Mount an NCM-W/F onto the JDVC half-chassis.<br><br>2.   Mount the JDVC onto its half-chassis.<br><br>3.   Optional: Mount an LCM-320 or stacked LCM-320/LEM-320 onto the IFC2-3030 half-chassis.<br><br>4.   Mount the IFC2-3030 or JNCA-2 onto its half-chassis.<br><br>5.   Mount the MIC-1 and optional TELH-1 handset into the chassis well. | <br><br>1.   Section 2.6 on page 26.<br><br>2.   Section 2.7 on page 26.<br><br>3.   IFC2-3030 installation manual.<br><br><br>4.   IFC2-3030 installation manual or JNCA-2 manual.<br><br>5.   CA-2 installation document. |
| Slide chassis component(s) aside for wiring. | CA-1 - Section 2.8.1 on page 27<br>CA-2 - Section 2.8.2 on page 27 |
| Wire and program the panel. | IFC2-640, IFC2-3030 or JNCA-2 manuals. |
| Wire and configure the JDVC. | Sections 2.9, "Wiring" and 3.1, "Setting the Configuration Switches" in this manual. |
| Program the JDVC. | VeriFire Tools and help files. |
| Install dress panels, doors and covers. | CAB-4 Series installation document. |
| Test the system. | |

**Table 2.1  JDVC Series Installation Checklist**

## 2.4  Cabinet

Locate the cabinet backbox on a surface that is in a clean, dry, vibration-free area. The top should be located so that all operational buttons, switches, displays, etc. are easily accessible and/or viewable to the operator - usually no more than 66 inches (1.7 m) above the floor. Allow sufficient clearance around the cabinet for the door to swing freely, and for easy installation and maintenance of equipment.

Use the four holes in the back surface of the backbox to provide secure mounting.  Follow the instructions below.

1.   Mark and pre-drill two holes for the keyhole mounting bolts. Install bolts.

2.   Select and punch open the appropriate cabinet knock-outs.

3.   Using the keyholes, mount the backbox on the two bolts.

4. Mark the location for the two lower holes, remove the backbox and drill the mounting holes.

5. Mount the backbox over the top two screws, then install the remaining fasteners. Tighten all fasteners securely.

6. Feed wires through appropriate knockouts.

7. Install Digital Voice Command according to this section before installing the door per the CAB-4 Series Cabinet Installation Document.

# 2.5  Mount JDVC Series Option Boards

Option boards should be mounted to the JDVC at this point. If both the DVC-AO and DVC-KD are used, the DVC-AO must be mounted first, as it fits behind the DVC-KD.

## 2.5.1  DVC-AO Analog Output Board

Mount the DVC-AO according the instructions in Figure 2.3.

1. Position three 1-1/4" male/female aluminum standoffs (included, P/N 42186) in holes in the JDVC board where indicated.

2. Fasten them at the back of the board with three 4-40 KEPS nuts (included, P/N 36045).

3. Carefully attach the DVC-AO pin connector (included, P/N 08580) to the JDVC board at J10.
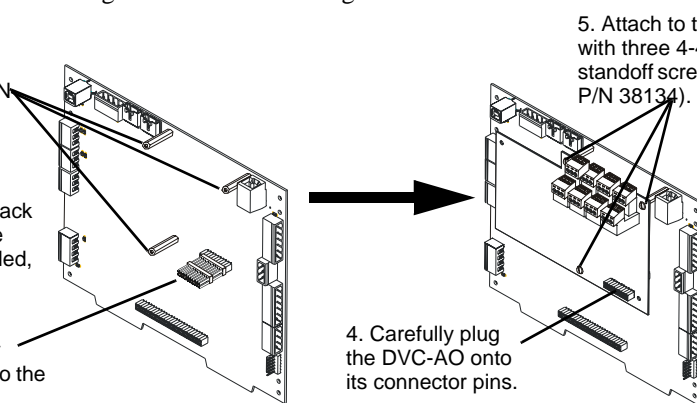
5. Attach to the JDVC with three 4-40 1/4" standoff screws (included, P/N 38134).

4. Carefully plug the DVC-AO onto its connector pins.

DVCwAOstndoffs.wmf
DVCandAO.wmf

**Figure 2.3  Mounting a DVC-AO**

## 2.5.2  DVC-KD Keypad

Mount the DVC-KD according to the instructions in Figure 2.4.

1. Screw the four 2-3/4"
male/female 4-40 metal
standoffs (included, P/N
42163) onto the JDVC
standoff studs on the
back side of the
DVC-KD.

2. Carefully attach
the DVC-KD pin
connector
(included, P/N
08569) to the
JDVC board at
J6.

DVC-KD

JDVC (shown
with DVC-AO)

4. Fasten the
standoffs at the back
of the JDVC
board with four
4-40 KEPS
nuts (included,
P/N 36045).

3. Carefully plug the
DVC-KD onto its
connector pins. The
metal standoffs will
automatically fit into
their standoff holes
during this process.

DVCandKDpins.wmf
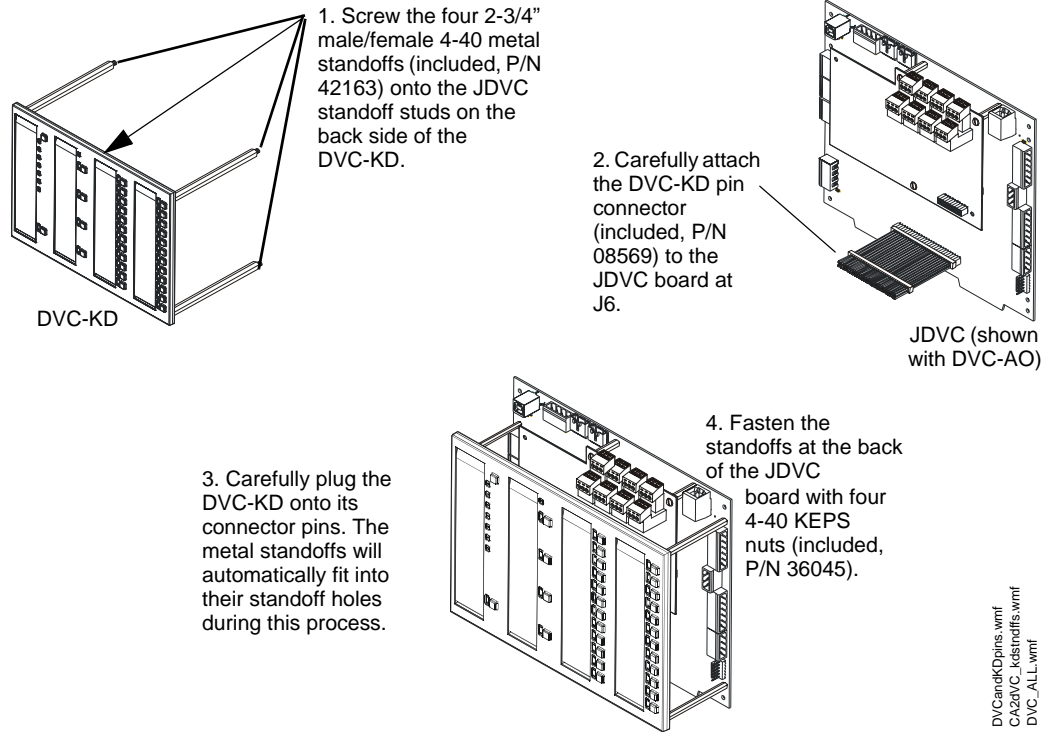CA2oVC_kdstndffs.wmf
DVC_ALL.wmf

**Figure 2.4  Mounting a DVC-KD**

Insert the slide-in labels that come with
the DVC-KD keypad. Install the pre-
printed labels  in the two left slots. There
are two labels with ALL CALL; one with
and one without text descriptions of the
bottom three buttons (See Figure 2.5).
For single-channel systems where the
Digital Voice Command and Digital
Audio Amplifiers will always play the
same audio message, the three buttons
have no function and the alternate label
should be inserted.

The two right slots provide for 24
annunciator-type functions that can be
programmed in VeriFire Tools. Once
they are programmed, label accordingly.
For a custom professional appearance,
generate the labels with Notifier's
LabelEase.

Pre-printed slide-in
labels for functions
that automatically
activate when the
DVC-KD is installed -
P/N 52467 for the
first (left) column,
P/N 52468 for the
second column

Two blank slide-in labels
for other programmed
functions (P/N 52469).

Alternate "ALL
CALL" slide-in
label  (P/N
52598) for
single-channel
systems.

LAMP TEST
TROUBLE
DVC OFF-LINE
MICROPHONE
TROUBLE
PHONE
TROUBLE
BUSY / WAIT
PAGE
INHIBITED
PRE-
ANNOUNCE

ALL
CALL

PAGE
ACTIVE
**EVAC**
AREAS

PAGE
ACTIVE
**ALERT**
AREAS

PAGE
**INACTIVE**
AREAS

ENABLE
TELEPHONE
PAGE

POWER

POWER
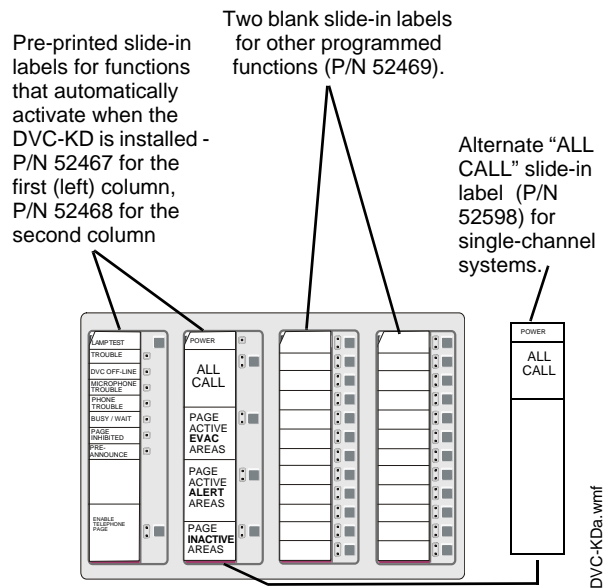
ALL
CALL

DVC-KDa.wmf

**Figure 2.5  DVC-KD with Slide-in Labels**

## 2.6  Mount an NCM-W/F in a CA-1 or CA-2 Chassis

An NCM-W/F card can be mounted behind a JDVC Series board in either the CA-1 or CA-2 chassis. Figure 2.6 illustrates how to install it in a CA-1.  Mounting is the same behind a JDVC board in the lower half-chassis of a CA-2.
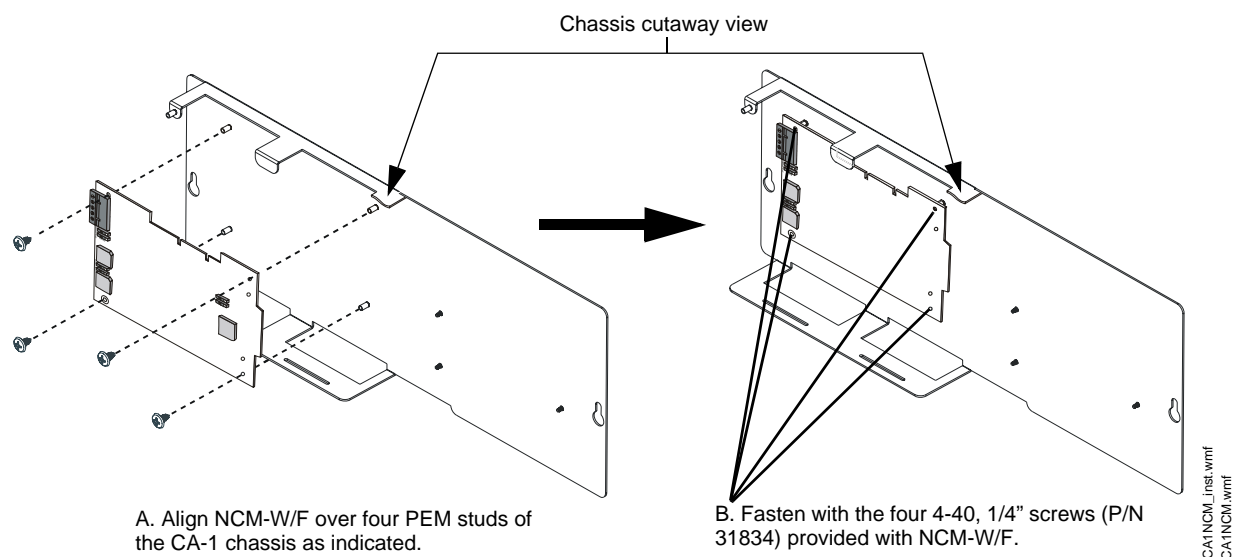
Chassis cutaway view

A. Align NCM-W/F over four PEM studs of the CA-1 chassis as indicated.

B. Fasten with the four 4-40, 1/4" screws (P/N 31834) provided with NCM-W/F.

CA1NCM_inst.wmf
CA1NCM.wmf

**Figure 2.6  Installing an NCM-W/F (CA-1 Example)**

CA-2 installations may require that a second NCM-W/F be mounted in the cabinet; one for the Digital Audio Amplifier and another for the FACP or network annunciator. This will require another cabinet row. The NCM-W/F may be mounted on a DAA chassis if one is installed in the cabinet (see the DAA Series manual for details), or it may be mounted in any chassis that will accomodate it in the cabinet.

## 2.7  Mount a JDVC Series Board in a CA-1 or CA-2 Chassis

Figure 2.7 illustrates a CA-1 installation.  Mounting is the same in the lower half-chassis of a CA-2.

A) Slide the tabs at the bottom of the JDVC into the slots at the bottom of the chassis.

C) Fasten with two 4-40, 1/4" screws (P/N 31834, included with the JDVC) at the top as indicated.
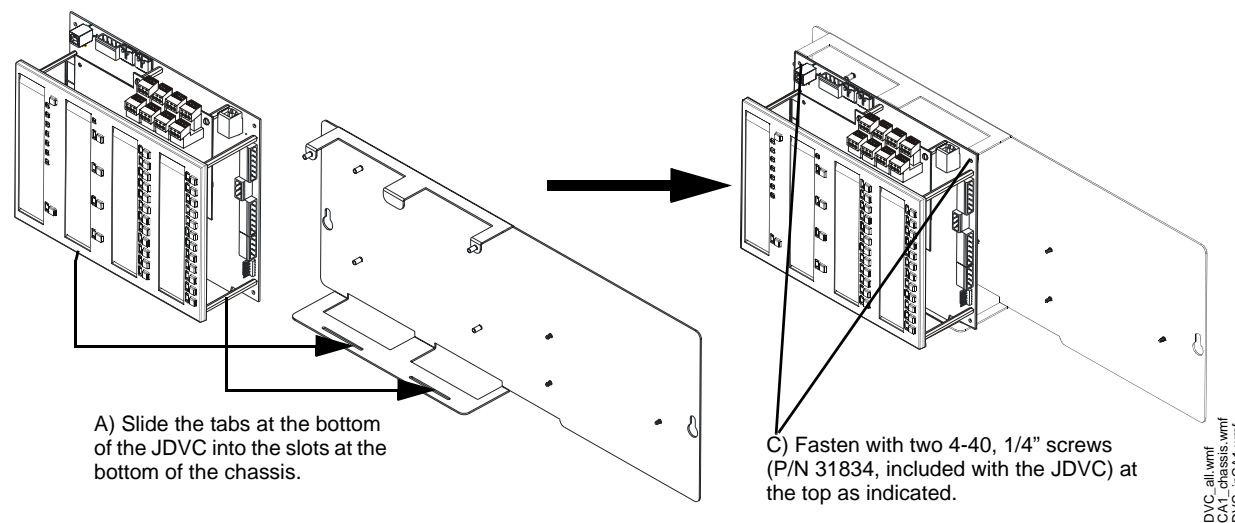
DVC_all.wmf
CA1_chassis.wmf
DVC_inCA1.wmf

**Figure 2.7  Chassis Mounting (CA-1 Example)**

# 2.8  Move the Chassis for Wiring Access

## 2.8.1  CA-1

The CMIC-1 chassis can be moved aside on the CA-1 to provide more space around the field-wiring connections.  Loosen hex nuts and move the chassis to the side as indicated in Figure 2.8.
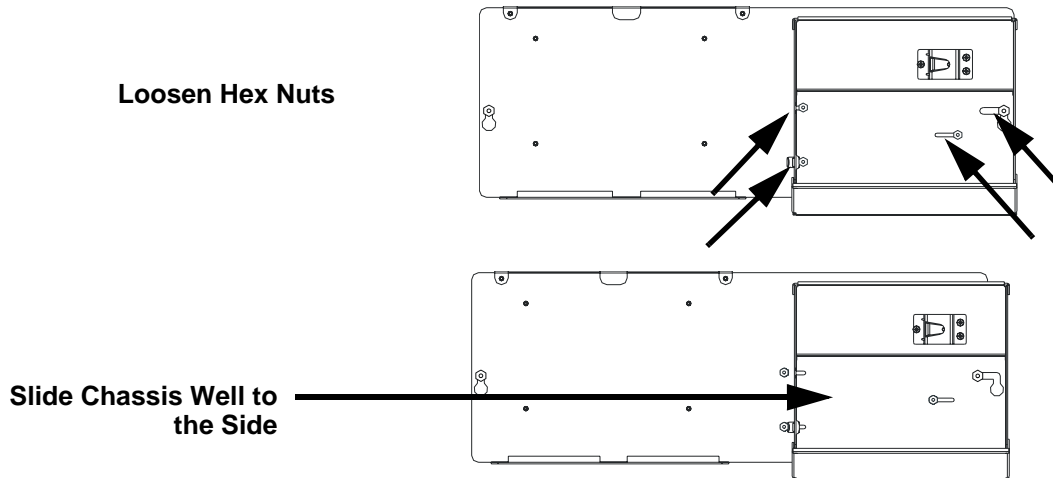
**Loosen Hex Nuts**

**Slide Chassis Well to the Side**



**Figure 2.8  Moving the CMIC-1 Chassis Aside for Wiring Access**

⚠ **CAUTION: Re-secure the hex nuts to prevent equipment damage**.
After returning the CMIC-1 chassis to its standard position, tighten all hex nuts. If the nuts are not re-secured, they could continue to loosen each time the well is moved and may eventually fall off.

## 2.8.2  CA-2

To provide more space around the field-wiring connections, loosen hex nuts and move chassis components to the side. Each half-chassis slides to the left; the double-well slides to the right.



**Loosen Hex Nuts**

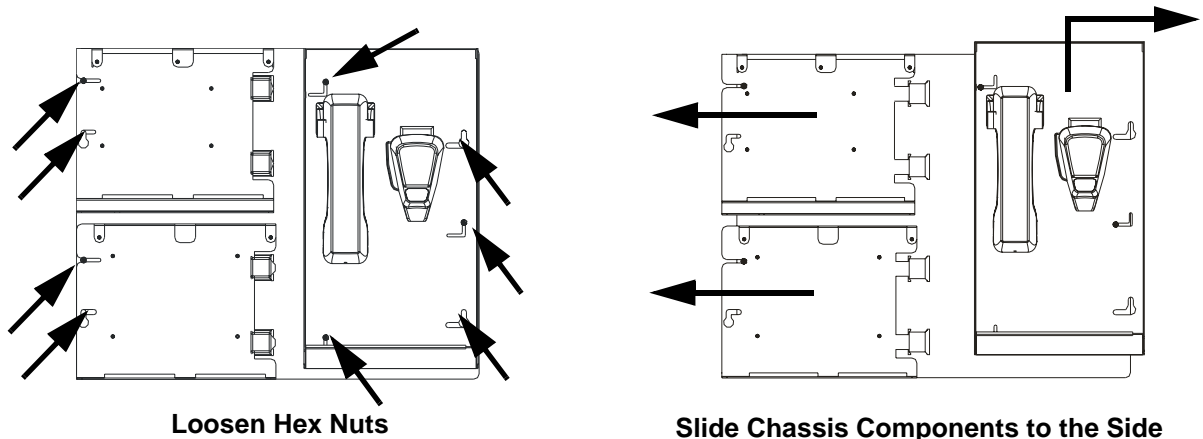**Slide Chassis Components to the Side**

**Figure 2.9  Moving Aside the CA-2 Chassis Components for Wiring Access**

⚠ **CAUTION: Re-secure the hex nuts to prevent equipment damage**.
After returning the double-well and half-chassis to their standard position, tighten all hex nuts. If the nuts are not re-secured, they could continue to loosen each time the double-well is moved and may eventually fall off.

# 2.9  Wiring

## 2.9.1  JDVC Series Board to 24V Power

**TB1 IN**

- Connect to a nonresettable +24V output of an IFC2-3030, IFC2-640 or a local power supply capable of supplying the JDVC's power requirements. (For requirements, see "24VDC Power - TB1" on page 13.)   Refer to the appropriate panel or power supply manual for connections.
- Power-limited by the source.
- The power supply must be monitored from an IFC2-3030, IFC-640 or a JNCA-2.
- 14 -18 AWG twisted-pair recommended.
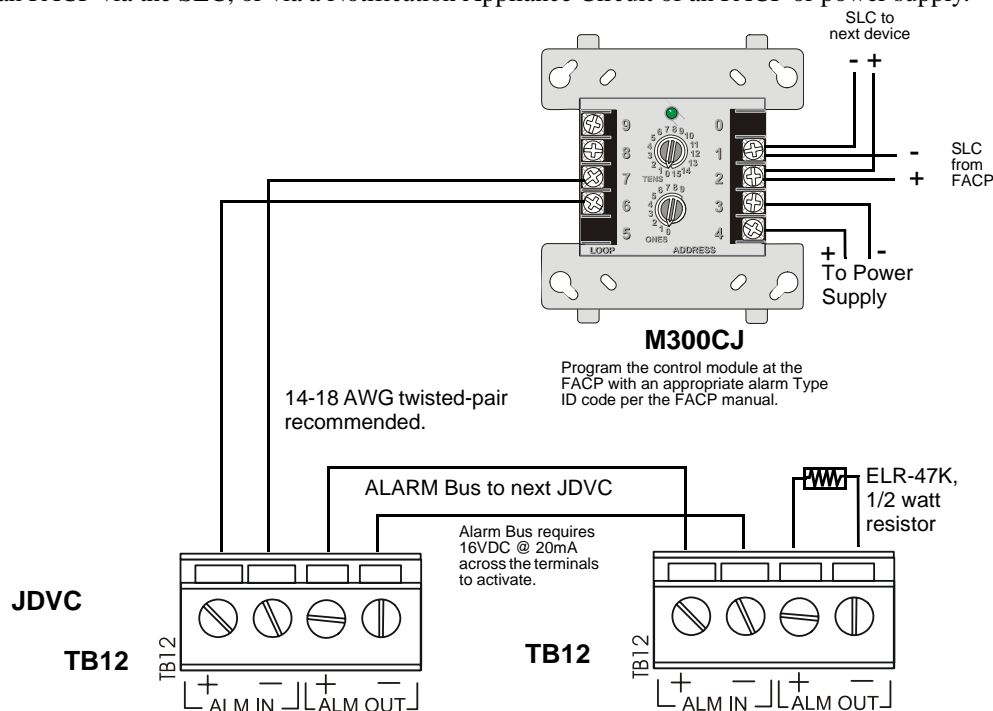
**TB1 OUT** - Typically used to power annunciators.
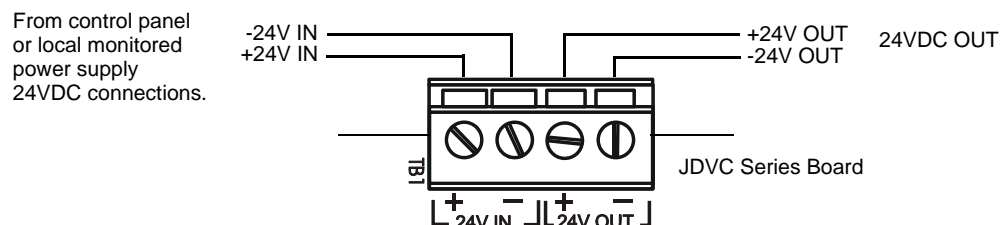


**Figure 2.10  TB1 - 24 Volt Power Connections**

## 2.9.2  Alarm Bus

The TB12 general alarm connections provide the option of receiving general alarm messages from an FACP via the SLC, or via a Notification Appliance Circuit of an FACP or power supply.



**Figure 2.11  Alarm Bus Connections to M300CJ**

**NAC Circuit**

A -

A +

B -

B +

LIsted compatible
panel or power
supply with onboard
NAC circuits.

14-18 AWG twisted-pair
recommended.

ALARM Bus to next JDVC

ELR per panel
or power
supply manual.

Alarm Bus requires
16VDC @ 20mA
across the terminals
to activate.

**JDVC**

TB12

**TB12**

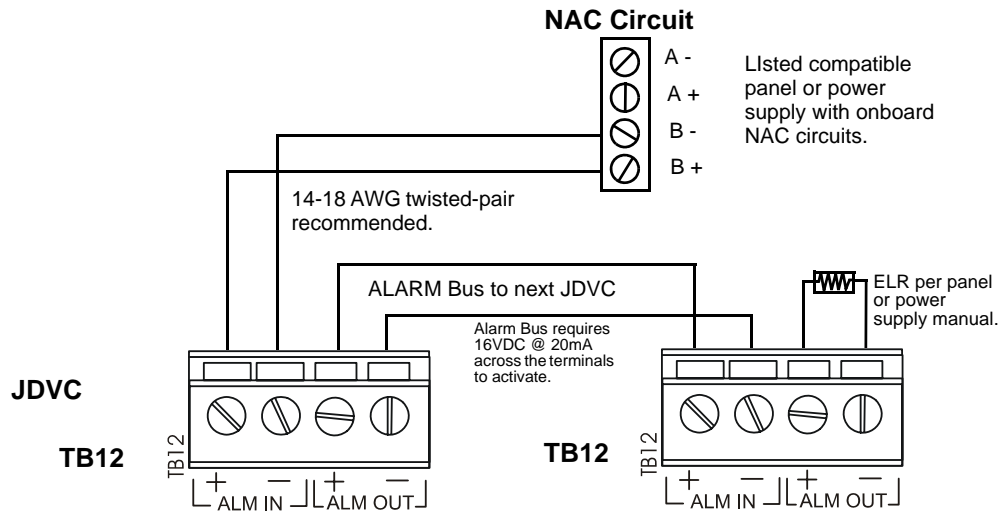ALM IN

ALM OUT

TB12

**TB12**

ALM IN

ALM OUT

DVCALARMtb12.wmf

**Figure 2.12  Alarm Bus Connections to NAC**

Refer to the SLC manual and specific panel or power supply manual for more information.

## 2.9.3  Digital Audio Ports A and B on Wire Version Boards

Digital Audio Ports A and B (DAP A and DAP B) allow digital communication with wire version DAA Series audio amplifiers. The wiring between these ports provides a Digital Audio Loop (DAL) for programming; alarm, control, trouble, automatic audio messages, address and firefighter's telephone data; and live voice paging communications.



**Figure 2.13  Wire Digital Audio Loop Connections**

📑 **NOTE:**   Digital Audio Ports A and B must be wired in Style 4 or Style 7 configuration. Do not wire them in bus configuration.

📑 **NOTE:**   Style 4 configuration must be installed in accordance with the requirements for survivability from attack by fire in the National Fire Alarm Code, NFPA 72.

Refer to "EFA and EFB (Switches 7 and 6)" on page 38 for information on enabling earth fault detection on the wire DAL.

## 2.9.4  RXA, RXB, TXA, TXB Fiber Version Board Connections

Fiber ports RXA, RXB, TXA and TXB allow digital communication with fiber version DAA Series audio amplifiers. The connection of these ports provides a Digital Audio Loop (DAL) for programming; alarm, control, trouble, automatic audio messages, address and firefighter's telephone data; and live voice paging communications.

> **NOTE:**  A DAL must be connected with one of the following:
>                   - All single-mode fiber connections, or
>                   - All multi-mode fiber connections.
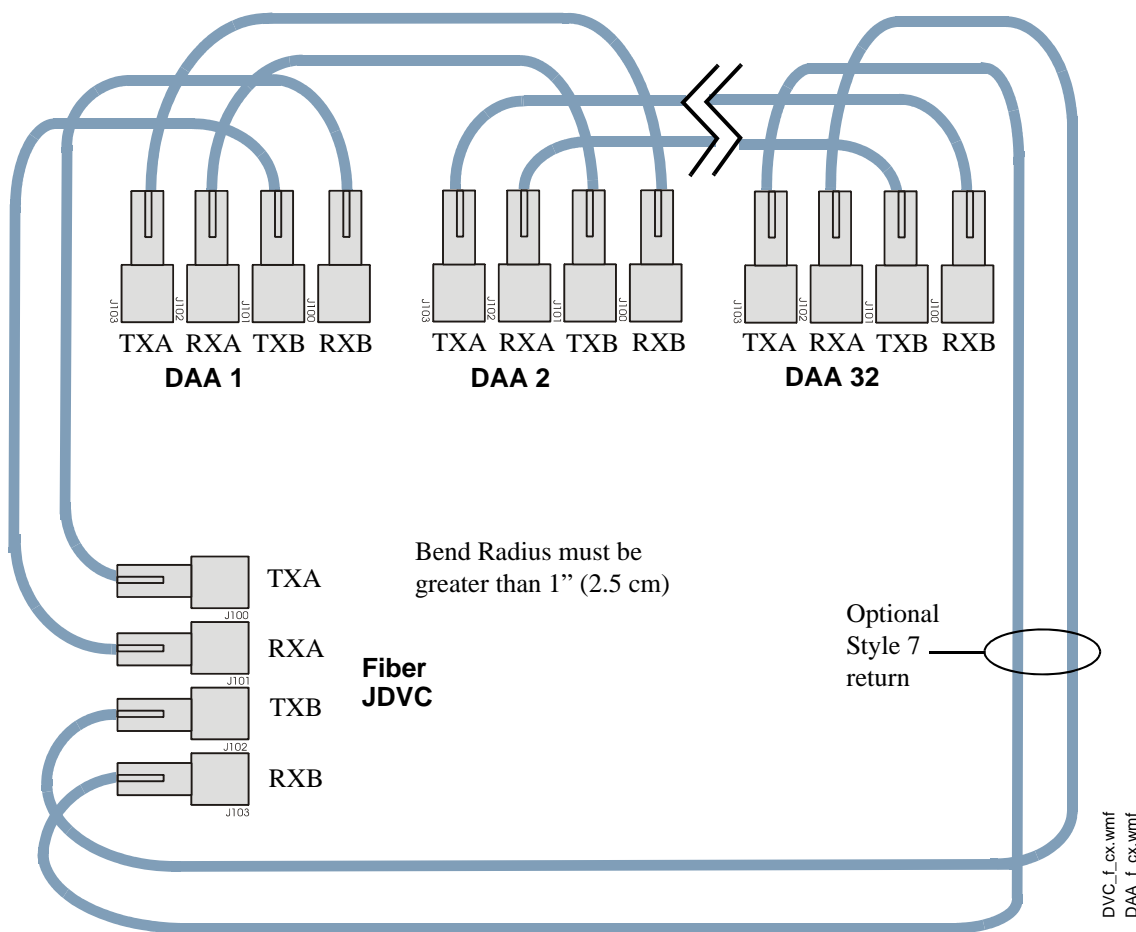> Multi-mode and single-mode can not be mixed.



**Figure 2.14  Fiber Digital Audio Loop Connections**

> **NOTE:**   Style 4 configuration must be installed in accordance with the requirements for survivability from attack by fire in the National Fire Alarm Code, NFPA 72.

## 2.9.5 **FFT Connectivity**

### **FFT Riser (TB13)**

The Firefighter's Telephone Riser connections (TB13) provide for the use of firefighter's telephones (FFTs) on an analog network. They are a means of connecting various FFT control modules and devices, such as M500MPJ modules, AFAWS, or XPIQ telephone circuits to the JDVC. The FFT riser may be wired in NFPA Class A (4-Wire) or Class B (2-Wire) configuration. VeriFire Tools must be used to select 4-Wire or 2-Wire for trouble supervision. A 3.9k 1/2 watt end-of-line resistor (included, P/N R-3.9k) is required for 2-wire configurations.
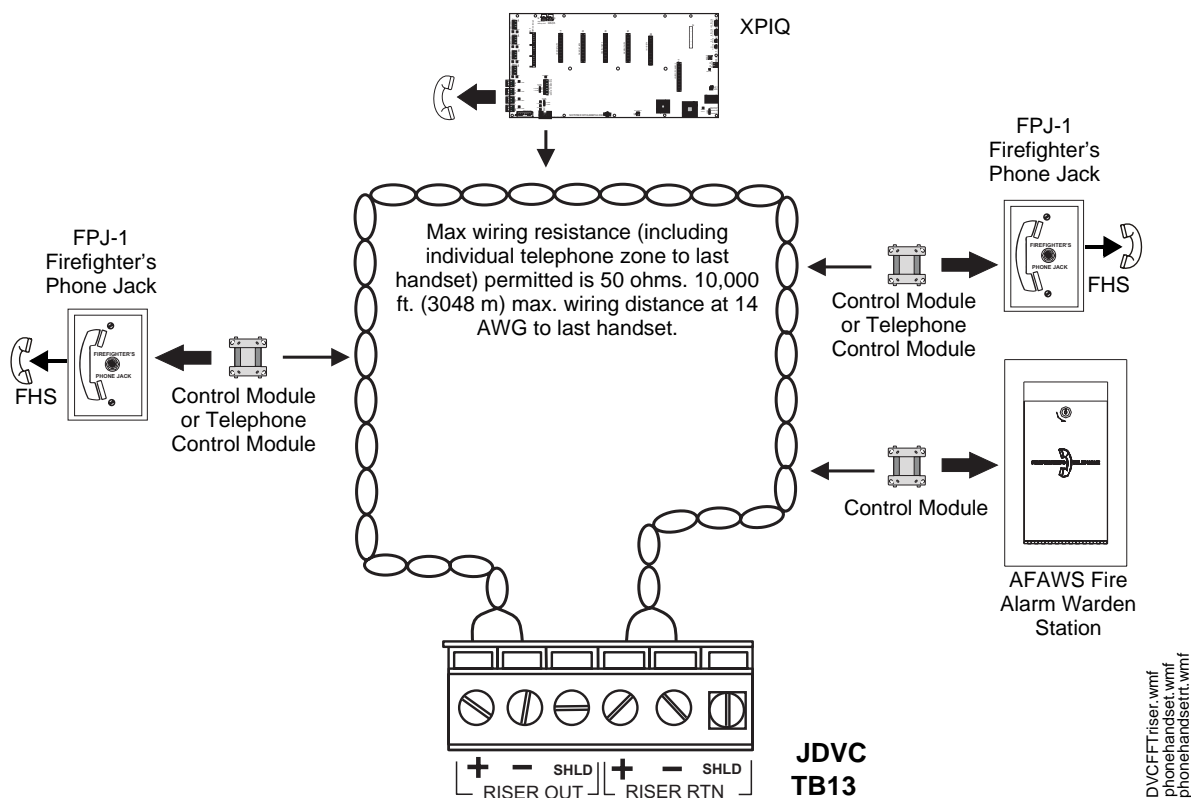


**Figure 2.15  FFT Riser on JDVC Series Board (4-Wire Example)**

An FHS firefighter's handset may be used with the phone jacks in Figure 2.15. For a description of the firefighter's telephone network operation, refer to "JDVC Series Firefighter's Telephone Network Communication" on page 68. An FFT on this riser may be used for paging locally or to Noti-Fire-Net.

**NOTE:**   For supervision of the FFT riser when using an AMPS-24/E to power the JDVC, use assembly AMPS-24PC*D* or higher of the AMPS-24/E.  Do not use AMPS-24PC*C* or less. The power supply's metal cover must be removed to view the board's assembly name. Refer to the illustration at right for location.

Location of assembly name on the AMPS-24/E board. Look for AMPS-24PC*D* or higher.
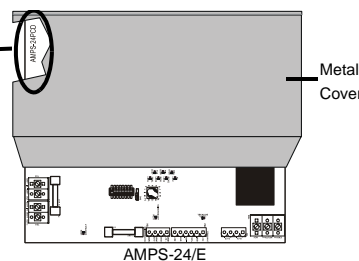


**NOTE:**   Digital audio software Version 2.0 and above does not support FFT risers on  JDVC or DAA PCA boards. Refer to Figures 1.2, 1.4, 5.2, and 5.4 for how to determine board type. Check VeriFire or an appropriate network display to determine the software version.

## 2.9.6  Auxiliary Inputs A and B

The JDVC provides two analog audio connections. Auxiliary inputs may be used for paging locally or to Noti-Fire-Net.
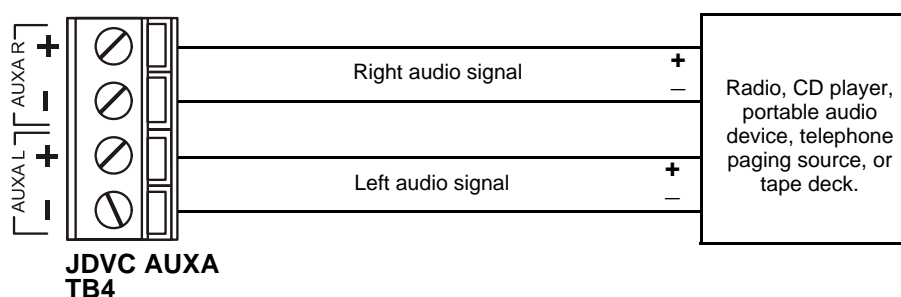
### Auxiliary Input A

Auxiliary Input A (AUXA) is intended for background music, and provides a high-fidelity connection to common audio appliances such as a radio, CD player, portable audio device, tape deck, or to a telephone paging source. Two-channel stereo signals are changed to monophonic signals.

VeriFire Tools programming determines if signal supervision of AUXA is enabled or disabled.

18 AWG twisted-pair recommended.

Signal strength from low-level analog audio input: $1V_{p-p}$ max.

Stereo input shown. Monophonic input may connect to either AUXA R or AUXA L.

**Figure 2.16  AUXA Auxiliary Audio Input**

### Auxiliary Input B

Auxiliary Input B (AUXB) is provided to accept low-level analog audio input at $12V_{p-p}$ nominal, $15V_{p-p}$ max. The messages are then transmitted out to DAA speaker circuits as designated by programming. VeriFire Tools programming determines if signal supervision of AUXB is enabled.
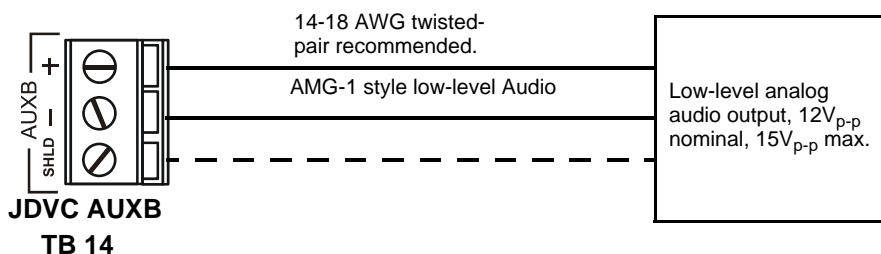
**Figure 2.17  AUXB Auxiliary Audio Input**

## 2.9.7  Network Connection (NUP) Ports

NUP Ports A and B (J1 and J2 on the JDVC board) are functionally the same, and either may be used to connect the JDVC to:

• either NUP1 *or* NUP2 (not both) on an NCM-W/F,

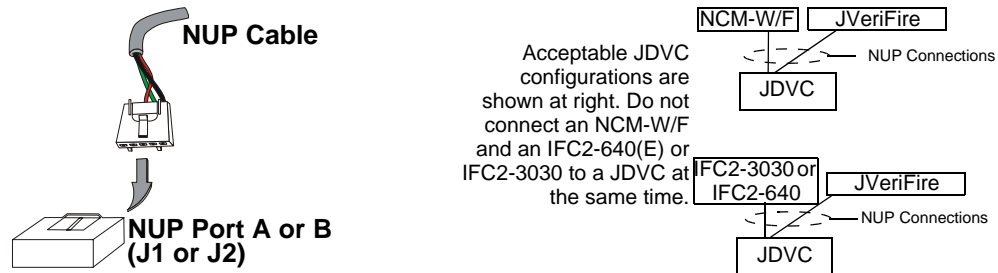• to an IFC2-3030 or IFC2-640,

• to VeriFire Tools.

**Figure 2.18  JDVC NUP Connections and Configurations**

NUP cables are included with NCM modules, with VeriFire Tools, and also with the JDVC.

## 2.9.8  Push-to-Talk Indicator

The Push-to-Talk (PTT, TB10) output provides a means of quickly identifying a paging event in a retrofit system. The PTT output is a set of Form-C relay contacts that changes state when the PTT button is pressed on the JDVC's MIC-1 microphone.
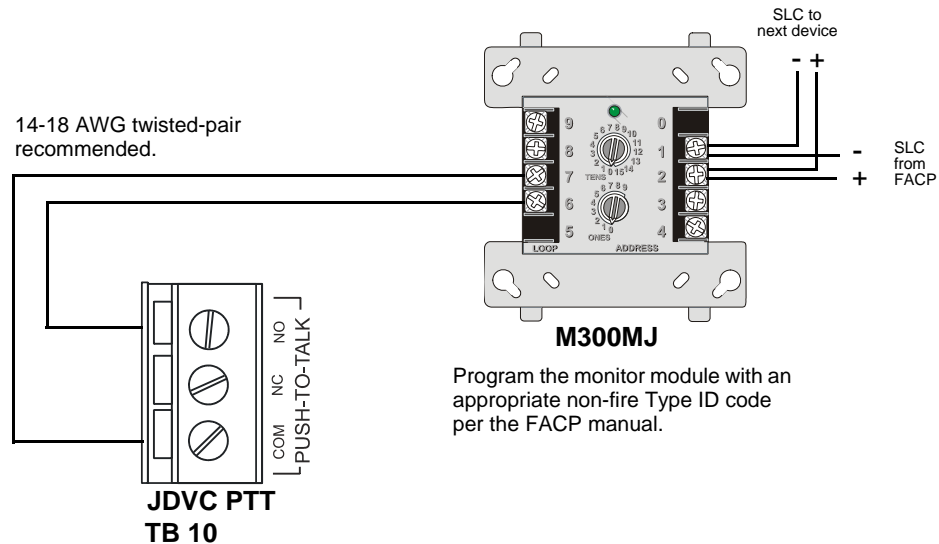
**Figure 2.19  Push-to-Talk Connections**

## 2.9.9  RM-1 Remote Microphone Interface

The Remote Microphone Interface (RMI, TB9) accomodates one RM-1 Series microphone, providing the JDVC with remote paging and/or message override capabilities.  The RM-1 may be used for paging locally or to Noti-Fire-Net. Refer to Figure 2.20 for JDVC connection to a single RM-1.
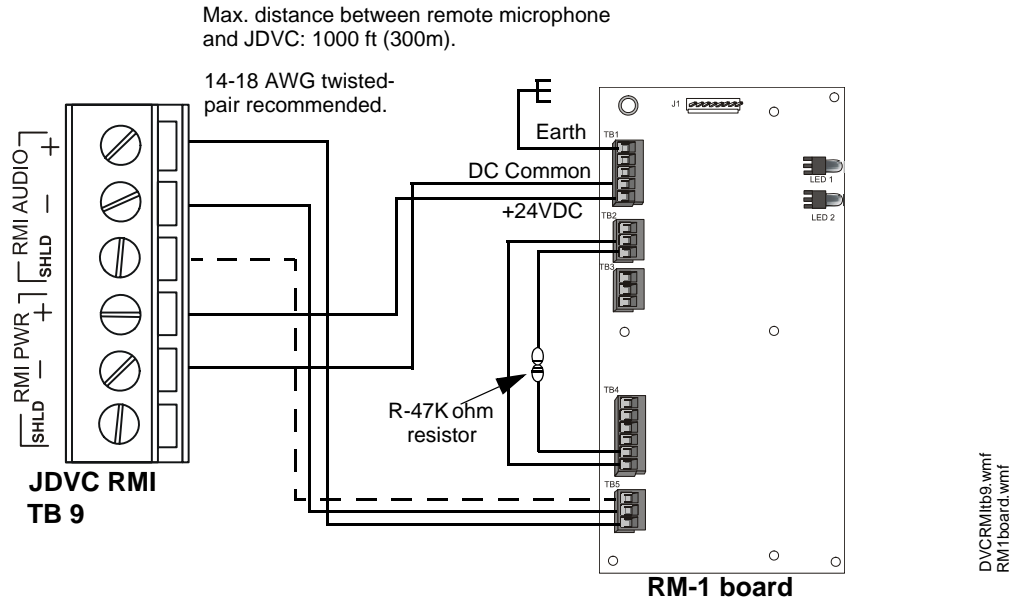
Max. distance between remote microphone and JDVC: 1000 ft (300m).

14-18 AWG twisted-pair recommended.

**Figure 2.20  RM-1 to JDVC Connections**

See the RM-1 Series manual for more information on this product. Refer only to single-microphone applications: multiples (e.g. daisy-chaining) are not compatible with the JDVC.

## 2.9.10  MIC-1 Local Microphone Interface

The local microphone interface (J5) is a plug-in connection for the cable on the MIC-1 microphone, which provides the JDVC with paging capabilities. The microphone connection will be monitored for continuity when MIC-1 is enabled in VeriFire Tools.
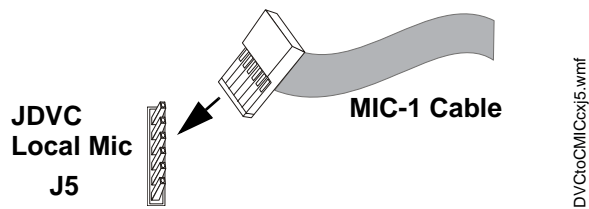
**Figure 2.21  MIC-1 Microphone Interface**

## 2.9.11  TELH-1 Local Phone Interface

The local phone interface (J8) is a plug-in connection for the cable on the TELH-1 firefighter's telephone handset. This provides a connection to the analog FFT riser, and gives the JDVC paging capabilities (selectable from the DVC-KD and utilization of the phone's push-to-talk button). The TELH-1 will be supervised for short or open circuit conditions when "Local FFT" is selected in .
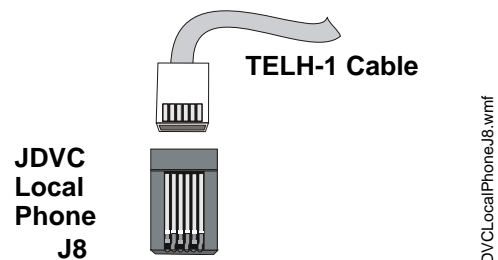
**Figure 2.22  TELH-1 Telephone Interface**

## 2.9.12  Analog Audio Outputs (DVC-AO)

The DVC-AO option board generates low-level analog audio messages that may be used as inputs to AA-Series audio amplifiers, XPIQ audio input boards and ACT-1 audio coupling transformers.

Figure 2.23 and Figure 2.24 give examples of how the DVC-AO may be used. For more complete wiring instructions on the AA-Series amplifiers, XPIQ, and ACT-1, refer to the documentation that accompanies these devices.

Recommended wiring: 18 AWG or larger, twisted pair (shielding optional).
Max. impedence: 66 ohms.
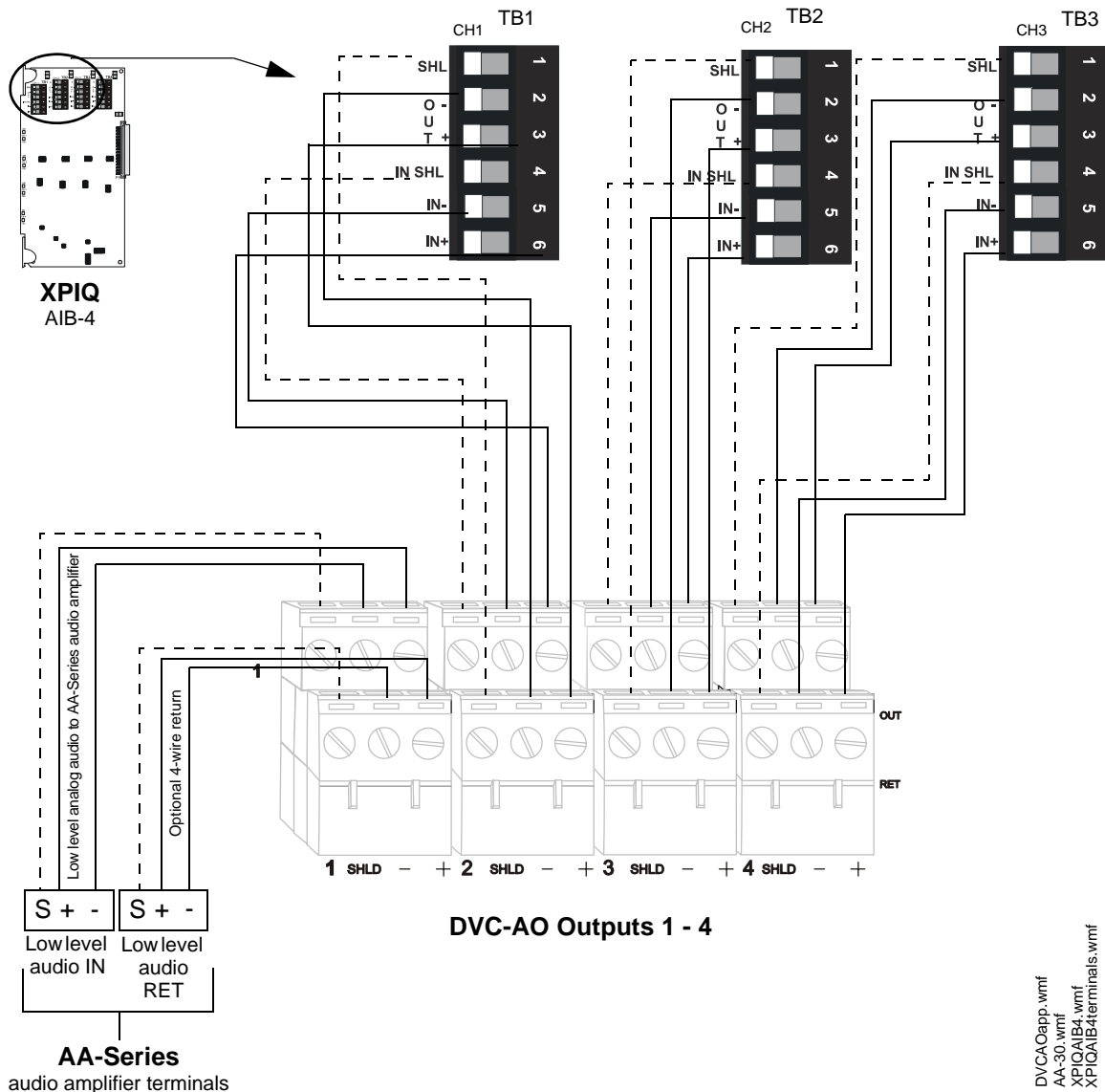Signal strength: $+12V_{p-p}$ max.

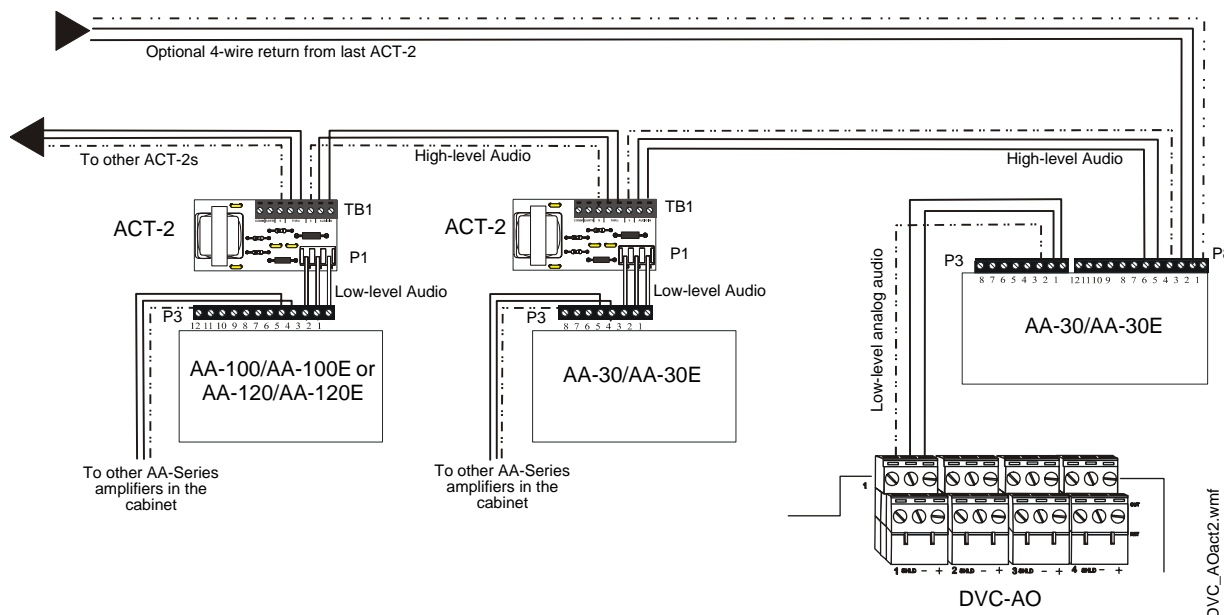**Figure 2.23  Wiring the DVC-AO Board, Example A**

**Figure 2.24  Wiring the DVC-AO Board, Example B**

### 2.9.13  UL Power-limited Wiring Requirements

JDVC circuit wiring is all power-limited, and it may enter or exit the cabinet together. However, when the JDVC is in a cabinet with another product that has non-power-limited wiring, all of the JDVC's circuitry must be separated from any non-power-limited circuitry in the cabinet. All power-limited circuit wiring must remain at least 0.25 inches (6.35 mm) from any non-power-limited circuit wiring. All power-limited and non-power-limited circuit wiring must enter and exit the cabinet through different knockout and/or conduits. Install tie wraps and adhesive squares to secure the wiring.

## 2.10  Replacement of NVRAM Memory-Backup Battery

The JDVC board has a snap-in lithium battery that provides backup of the JDVC's on-board memory during power loss. Refer to Figure 1.2 on page 15 for the location. The expected shelf-life for this battery is 10+ years. However, if battery connections are damaged or the battery does lose power, a system trouble message will appear: "NVRAM BATT TROUBLE". A new battery ( SGS Thompson M4T32BR12SH1) must be purchased and installed to replace the old.

To replace the battery:

1.  Power down the system.
2.  Remove any boards in front of the JDVC board to provide access to the battery.
3.  Use your fingers to carefully pull the battery off the board.
4.  Align and push the new battery into the same space. The dot in one corner of the battery should align as indicated in Figure 1.2 on page 15 or Figure 1.4 on page 17.
5.  Replace the front boards and power up the system.
6.  Reset the time at Noti-Fire-Net's master clock so the JDVC will immediately regain its clock function. If this step is skipped, the JDVC will send out network messages with an invalid time stamp until it regains its clock function within an hour communicating on Noti-Fire-Net.

# Section 3: JDVC Configuration and Programming

## 3.1 Setting the Configuration Switches

### 3.1.1 Piezo (Switch 5)

A JDVC Series board has a piezo that arrives from the factory enabled. It will sound during a JDVC trouble event, and may be acknowledged at an IFW, JNCA-2, or an IFC2-3030 or IFC2-640 that is not on Noti-Fire-Net. However, it will resound if another trouble event occurs within the JDVC.

The piezo can be disabled or enabled using SW5. Disabling the piezo causes a trouble to be sent to the panel or network annunciator.
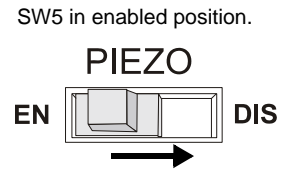
SW5 in enabled position.

PIEZO

EN ☐ DIS

To disable, push the switch towards DIS.

**Figure 3.1 Piezo Enable/Disable**

### 3.1.2 EFA and EFB (Switches 7 and 6)

JDVC wire boards have two earth fault detection switches for use with Digital Audio Ports (DAPs) A and B. The switches arrive from the factory disabled, and may require resetting if earth fault detection is desired. (Refer to Figure 3.2).

Each DAP on a JDVC wire board is electrically isolated from the other DAP and all other circuitry on that board.

A DAP with its associated earth fault switch enabled must be connected to a DAP with its associated earth fault switch disabled for detection to occur. Otherwise, either

- no detection will occur (when two connected DAPs have their associated switches disabled), or
- an earth fault will be generated (when two connected DAPs have their associated switches enabled).

Refer to Figure 3.3.

SW6 and SW7 in enabled positions.

**EN** EFA **DIS**

SW7

**EN** EFB **DIS**

SW6
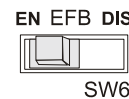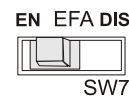
To disable, push the switch towards DIS.

**Figure 3.2 EFA/EFB Enable/Disable**

For specific DAP wiring instructions refer to Figure 2.13, "Wire Digital Audio Loop Connections" on page 30.
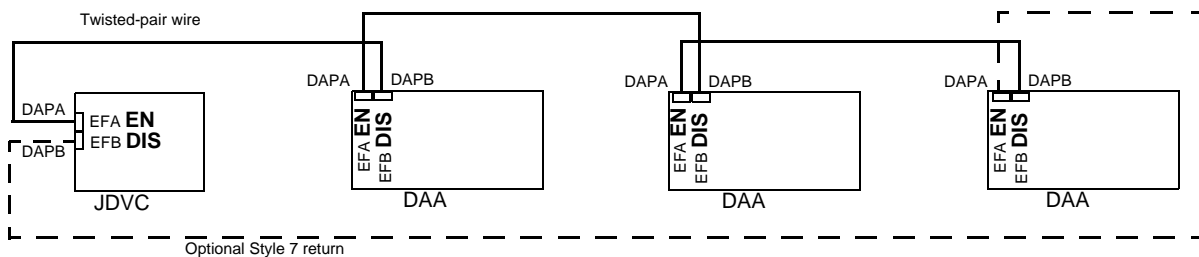


**Figure 3.3 Earth Fault Switch Settings for a Wire Digital Audio Loop (DAL)**

### 3.1.3  4WIRE (Switch 8)

The FFT riser may be wired in a Class A( 4-wire) or a Class B (2-wire) configuration. For Class A installations, enable the switch. For Class B, disable the switch.

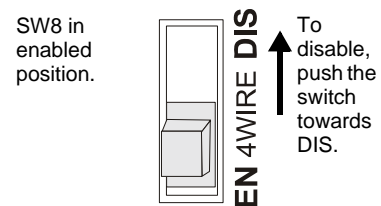VeriFire Tools programming must be set the same as this switch.

SW8 in enabled position.

4WIRE **EN**  4WIRE **DIS**

To disable, push the switch towards DIS.

**Figure 3.4  4WIRE Enable/Disable**

## 3.2  Panel Programming

Volume control settings for JDVC Series boards are programmed at a JNCA-2 or IFC2-3030. Refer to the point programming sections of these manuals for more information, as well as to the annunciator programming sections for relevant ACS programming instructions.

## 3.3  VeriFire Tools Programming

All programming besides JDVC volume control is done in VeriFire Tools. DAA Series amplifier programming can be routed through the JDVC, allowing code to be loaded simultaneously into multiple DAAs.

**NOTE:**  VeriFire programming is laid out in the following sequence:

1. JDVC (See "JDVC System Programming" on page 40)
2. DAAs (See "DAA Amplifier Programming" on page 48)
3. Audio Messaging (See "Audio Message Programming" on page 51)
4. Logic Equations (See "Logic Equation Builder" on page 56)
5. PAM points (See "Prioritized Audio Matrix (PAM) Programming" on page 57)

Following are general descriptions of VeriFire Tools programming required for JDVC operation.

## 3.3.1 JDVC System Programming

All JDVC settings required for a functional JDVC Series board are included in this section of programming.

**NOTE:** The JDVC node number is assigned at the beginning of the VeriFire Tools session when the database is opened. The JDVC must *always* be assigned a unique node address, even when used with a standalone FACP. That is, when used with a standalone FACP, the JDVC must be assigned a node number different from that FACP.

### General I



DVC_General_1_TabBWa.jpg

**Figure 3.5  DVC System Programming Service – General I**

**JDVC Label**

Enter the network node label for this JDVC. You may enter up to 40 characters.

**Common Settings**

**LOCAL CONTROL** – Select to enable local JDVC control of the following DVC-KD keys: ALL CALL, PAGE ACTIVE EVAC AREAS, PAGE ACTIVE ALERT AREAS, and PAGE INACTIVE AREAS, ENABLE TELEPHONE PAGE.

**ANALOG OUTPUTS** - Describe the configuration ("Not Installed", "Installed, Class A," or "Installed, Class B") of JDVC's analog outputs. "Installed" analog outputs will be represented in the PAM as output circuits for DVC-0. (PAM programming is described in "Prioritized Audio Matrix (PAM) Programming" on page 57.)

**LOCAL/REMOTE MICROPHONE** - Select to install the local and/or remote microphone. See the RM-1 Series manual for more information on the remote microphone.

**DVC MODEL** - Choose from the drop-down menu to indicate if the JDVC is the standard (JDVC) or an extended memory (JDVC-EM) version. The JDVC-EM Extended Memory versions contain up to 32 minutes of standard quality (11.025 kHz sampling rate, 8 bit μ-law, mono) audio storage, or 4 minutes of high quality (44.1 kHz sampling rate, 16 bit PCM, mono).

**FIDELITY SELECTION** - Choose the desired audio quality (standard or high). A message saved as high quality requires more storage space than the same message saved as standard quality.

> ⚠ **CAUTION: DVC Model/Fidelity Selection**
> ***Do Not*** modify settings for "DVC Model" or fidelity programming once PAM points and Audio Messages are installed. Changing these selections will ***delete*** all PAM Points and Audio Messaging information.

### Firefighter Telephone Settings

**LOCAL FFT** – Select when a local TELH-1 FFT is installed. The connection will be supervised for open and short circuit conditions.

**FFT RISER WIRE SELECTION –** Select to describe the wiring style, 2 WIRE (Class B) or 4 WIRE (Class A) of the FFT riser. Switch 8 (Refer to "4WIRE (Switch 8)" on page 39) must be set the same as this selection.

### Auxiliary Input

AUX INPUT A and/or AUX INPUT B - Check the input(s) that are installed.

SUPERVISION - Check to enable supervision of the specified inputs.

AGC - Check to enable automatic gain control. This feature will smooth an incoming signal to produce a consistent sound.

> 📄 **NOTE:** Enable automatic gain control only in applications where the input is a voice input, such as from a telephone paging system. Do not use automatic gain control when using background music.

BACKGROUND MUSIC - Check if the input is to be used for background music. When this box is checked, background music that has been pre-empted by a higher priority message (e.g. ALL CALL) will resume once the higher priority message has completed its broadcast.

### NFN Media Interface Settings

Set Port A and Port B thresholds for HIGH or LOW to establish tolerable noise thresholds for network communications.

**WIRING STYLE** - Select according to your network's configuration (STYLE 4 or STYLE 7). Refer to NOTI•FIRE•NET v.5.0 and Higher Manual for more information.

**PROGRAM** - This button will save your changes to the VeriFire Tools database.

**CLOSE** - This button will close the current service. If there are changes that have not been saved (by pressing the **PROGRAM** button), VeriFire Tools will prompt you to do so.
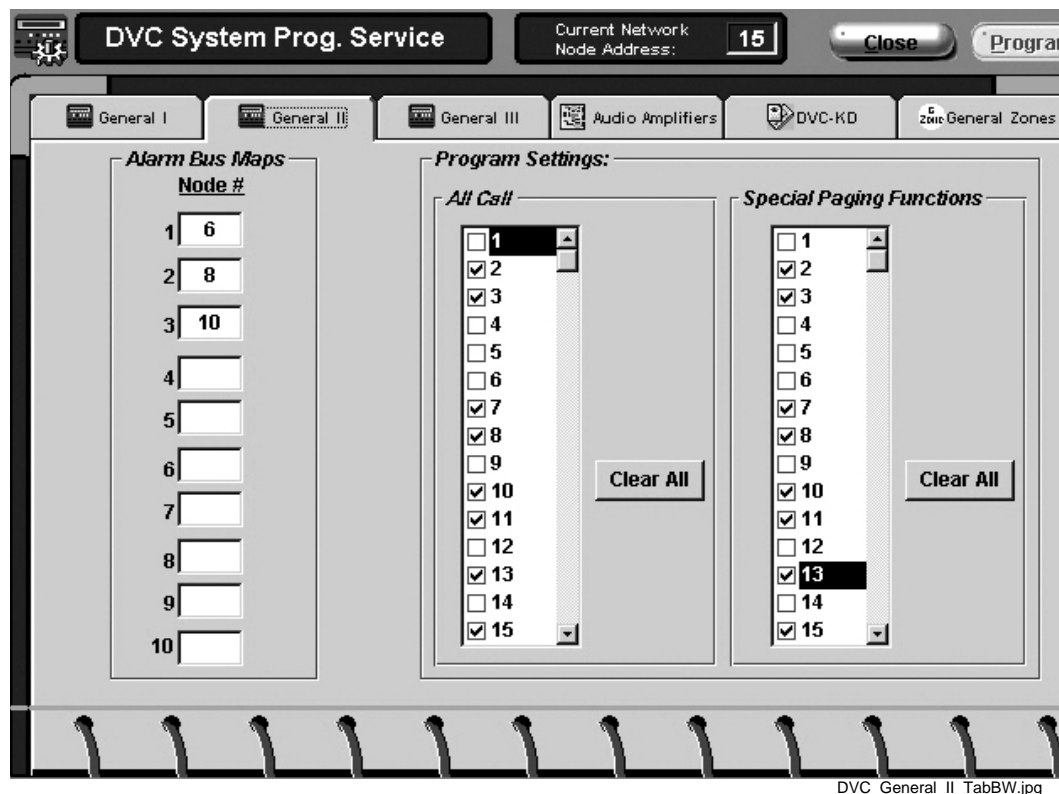
### General II



DVC_General_II_TabBW.jpg

**Figure 3.6  DVC System Programming Service – General II**

### Alarm Bus Maps

Map up to ten node numbers that will act as Alarm Bus sources. The Alarm Bus is used for backup activation of alarm messages when normal digital communication is lost.  If any one of the mapped nodes goes offline, the JDVC will monitor the Alarm Bus input.

### Program Settings

Check the node numbers to set up for ALL CALL or SPECIAL PAGING FUNCTIONS paging at the selected nodes. Nodes should be other JDVCs or a panel with an XPIQ.

SPECIAL PAGING FUNCTIONS is comprised of the settings for the DVC-KD buttons PAGE ACTIVE EVAC AREAS, PAGE ACTIVE ALERT AREAS, and PAGE INACTIVE AREAS. In multi-channel applications (where audio message sequences are saved in standard fidelity format), these pages are designed to override the message sequence types they describe (EVAC or ALERT messages that are active), or to page to areas where no messages are active.  In single-channel applications (where audio message sequences are saved in high fidelity format), these pages are not operative and the column will be grayed out.

**PROGRAM** - This button will save your changes to the VeriFire Tools database.

**CLOSE** - This button will close the current service.  If there are changes that have not been saved (by pressing the **PROGRAM** button), VeriFire Tools will prompt you to do so.
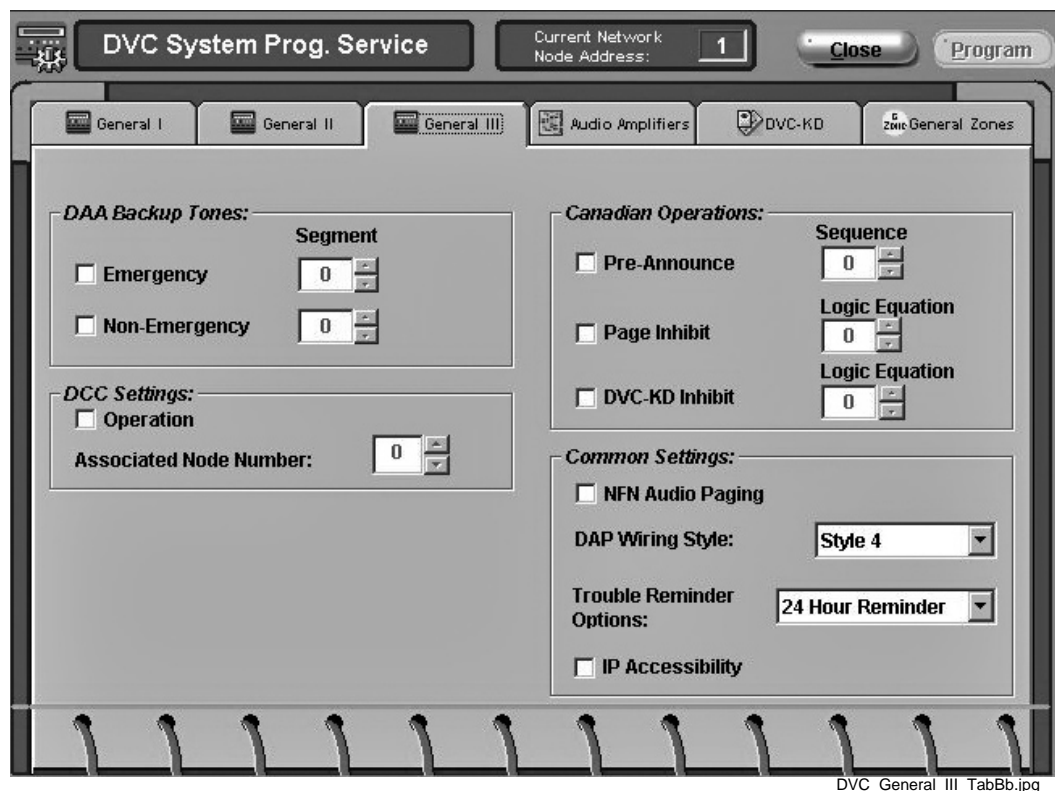
### General III



DVC_General_III_TabBb.jpg

**Figure 3.7  DVC System Programming Service – General III**

**DAA BACKUP TONES:**

Defines the message segments (usually tones) that will be broadcast during the loss of DAP communication. These backup messages are stored within each DAA for activation when the command bus is not functioning.

**EMERGENCY** - The message segment selected will broadcast when DAA's alarm bus is active.

**NON-EMERGENCY** - The message segment selected will broadcast when the DAA's alarm bus is inactive). This message will not broadcast during AC failure.

**DCC SETTINGS:**

Defines whether the JDVC will participate in DCC operation for paging functions, and if so, which network control node it will be associated with.  See Section 4.4, "Display and Control Center (DCC)".

**DCC OPERATION** – Check to enable DCC participation.

**DCC ASSOCIATED NODE NUMBER** – Map a DCC-designated JDVC to a network control node through which it will be able to assert network control for network paging purposes.

**Canadian Operations**

**Pre-Announce** – To enable the Pre-Announce feature, click Pre-Announce, then select an audio sequence. The selected sequence will play before all pages from the JDVC's MIC-1 local microphone, the TELH-1 local telephone, and teh RM-1. The "Pre-Announce" LED on the DVC-KD will light for the duration of the pre-announce.

**Page Inhibit** – The Page Inhibit selection applies to the ALL CALL, PAGE ACTIVE EVAC AREAS, PAGE ACTIVE ALERT AREAS, and PAGE INACTIVE AREAS buttons on the DVC-KD. To enable, check the box and select a logic equation that will inhibit the page while the logic equation is active. The "Page Inhibit" LED on the DVC-KD will light for the duration of the page inhibit.

**DVC-KD Inhibit** – The DVC-KD Inhibit selection applies to the 24 buttons on the right half of the DVC-KD. To enable, check the box and select a logic equation that will inhibit the DVC-KD while the logic equation is active.

**COMMON SETTINGS:**

**NFN AUDIO PAGING** - Check this box if network paging from any of the JDVC's live inputs to outputs on other JDVCs is desired. Live inputs can include the JDVC's local microphone, an RM-1 remote microphone, a firefighter's telephone, or a live input from an AUXA or AUXB connection. A check here creates the "Network" column in the PAM. (See "Prioritized Audio Matrix (PAM) Programming" on page 57.) If this box is not checked, network paging is disabled.

---

**NOTE:**   When NFN Audio Paging is selected, the number of nodes allowed on Noti-Fire-Net is limited to 54.

---

**DAP WIRING STYLE** – Select Style 4 or Style 7.

**Trouble Reminder**

**TROUBLE REMINDER OPTIONS** – Select a 24 hour reminder, or none.

**IP ACCESSIBILITY**

Check to enable IP Access. This setting allows the disabling/enabling of commands, downloads and programming from the Wide Area Network (WAN).

JDVC downloads can be initiated by clicking the WAN Download icon located on the top menu bar. . They are timed for six hours.

---

**NOTE:**   Use of the IP Accessibility feature is subject to the approval of the local AHJ.

---

**PROGRAM** - This button will save your changes to the VeriFire Tools database.

**CLOSE** - This button will close the current service.  If there are changes that have not been saved (by pressing the **PROGRAM** button), VeriFire Tools will prompt you to do so.

### Audio Amplifiers

Select and designate the function of the audio system's DAAs (Primary or Backup). Click on an amplifier's button to call up the DAA Amplifier Programming Service (page 48). An amplifier must be programmed into the system here before VeriFire Tools will allow configuration of its individual speakers circuits.
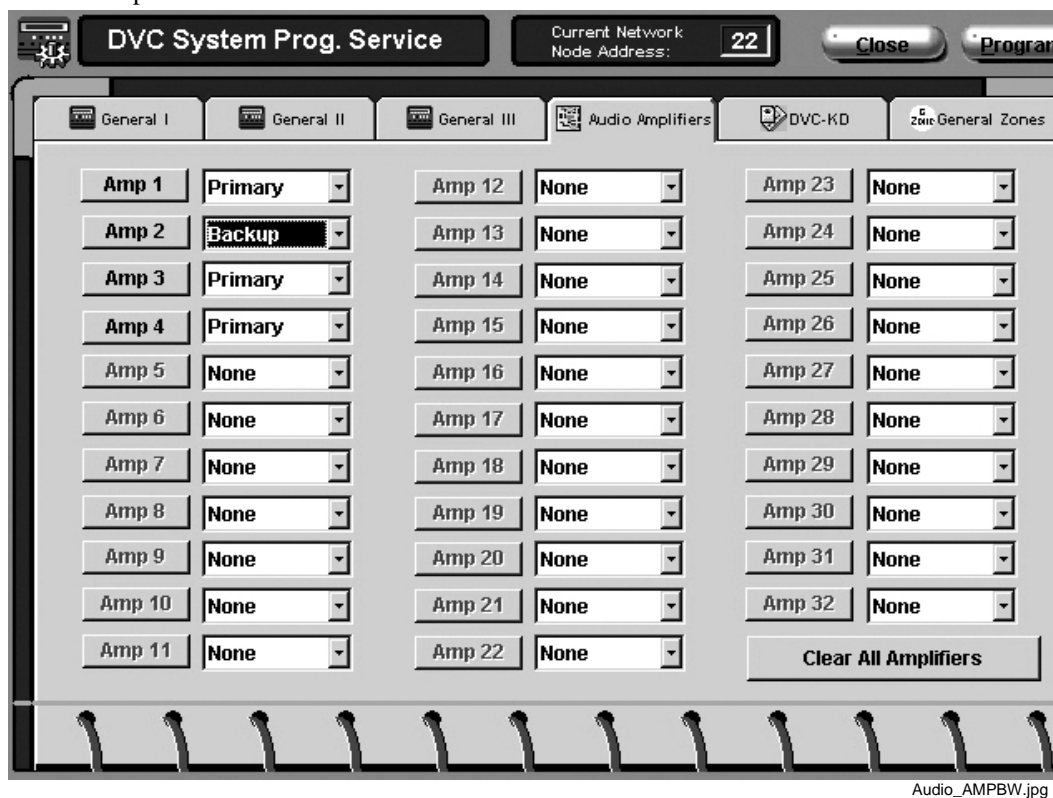


Audio_AMPBW.jpg

**Figure 3.8  DVC System Programming Service – Audio Amplifiers**

**PROGRAM** - This button will save your changes to the VeriFire Tools database.

**CLOSE** - This button will close the current service.  If there are changes that have not been saved (by pressing the **PROGRAM** button), VeriFire Tools will prompt you to do so.

## DVC-KD

Program the user-defined keys on the DVC-KD. Map a function to a node, module, detector, panel circuit point, zone, or PAM point.
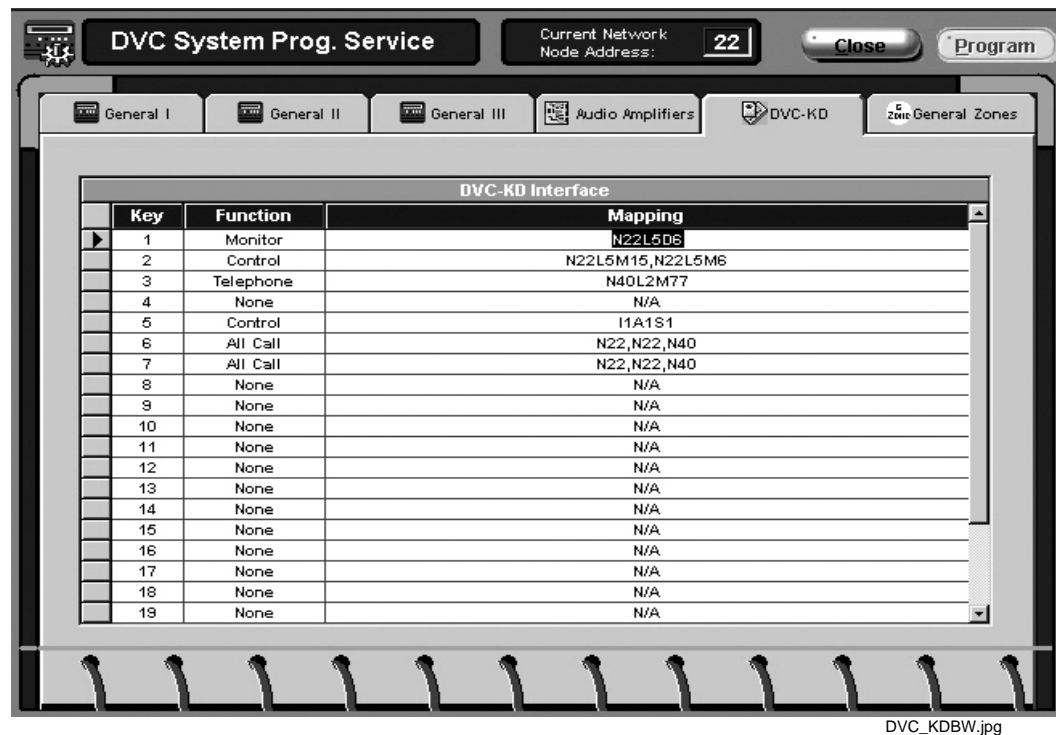


DVC_KDBW.jpg

**Figure 3.9  DVC System Programming Service – DVC-KD**

**Explanation of Fields:**

**KEY** -There are 24 user-defined keys on a DVC-KD. Refer to Figure 4.1 on page 64 for the numbering format.

**FUNCTION** - Select from Monitor, Control, Telephone, All Call, Page Evac, Page Alert, Page Inactive, Enable Paging or None.

- Select Telephone for all phone functions. Telephone may apply to either a telephone control module or a regular control module functioning with a telephone.
- Select All Call to broadcast to entire nodes.
- When Enable Paging is selected, AUX A or AUX B will be selectable.

**MAPPING** - Enter the points, nodes or zones to be mapped.

- The Control function allows mapping of up to 8 points.
- The All Call, Page Evac, Page Alert, and Page Inactive functions for the user-programmable keys allow mapping of up to 8 nodes. These nodes do not have to be any of the nodes selected to function with the All Call, Page Active EVAC areas, Page Active ALERT area, or Page INACTIVE area  buttons on the left side of the DVC-KD.

**PROGRAM** - This button will save your changes to the VeriFire Tools database.

**CLOSE** - This button will close the current service.  If there are changes that have not been saved (by pressing the **PROGRAM** button), VeriFire Tools will prompt you to do so.

### JDVC General Zones

Customize a JDVC general zone label using the following screen. See Section 3.4 on page 62 for information on programming JDVC general zones.



DVC_GenZonBW.jpg

**Figure 3.10  DVC System Programming Service – General Zones**

## 3.3.2  DAA Amplifier Programming

Use the following services to program associated amplifiers and speaker points with individual settings.
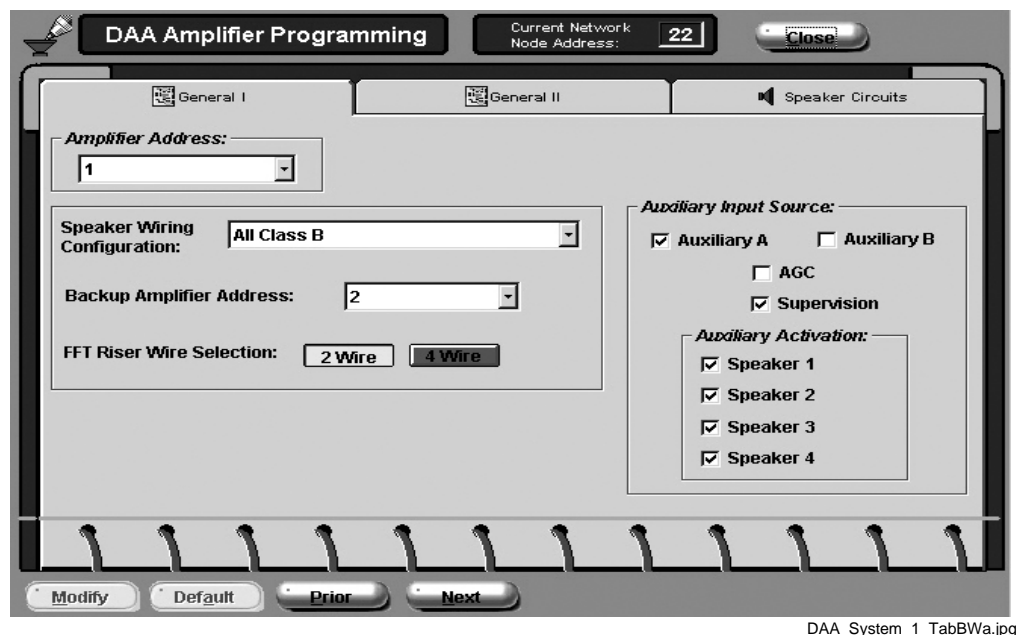
### General I



DAA_System_1_TabBWa.jpg

**Figure 3.11  DAA Amplifier Programming Service – General I**

**AMPLIFIER ADDRESS** - Select the installed DAA to be programmed. (See page 45.)

**SPEAKER WIRING CONFIGURATION** – Make selection to program speaker circuit pairs (1/2 and 3/4.) Selection must reflect physical configuration (All Class A; All Class B; 1 and 2 = Class A, 3 and 4 = Class B; 1 and 2 = Class B, 3 and 4 = Class A).

⚠ **CAUTION:** Changing the wiring class configuration after the speaker circuits have been programmed may delete the speaker circuit programming! (See page 50.)

**BACKUP AMPLIFIER ADDRESS** –  If desired, select an amplifier that will operate in the event of a failure at this one.

**FFT RISER WIRE SELECTION** – Select the wiring style (2 WIRE or 4 WIRE) according to the configuration of the analog network.

### Auxiliary Input Source

**AUXILIARY A/B** – Check to install either the AUXA *or* AUXB analog input (not both) into the database.

**AGC** – Check to enable automatic gain control.  This feature will smooth an incoming signal to produce a consistent sound.

📄 **NOTE:**   Enable automatic gain control only in applications where the input is a voice input, such as from a telephone paging system. Do not use automatic gain control when using background music.

**SUPERVISION** – Check to enable or disable supervision of the auxiliary input.

**AUXILIARY ACTIVATION** – Check which speaker circuits on the DAA will be activated when amplifying data from the AUX input.

**MODIFY** - This button will save your changes to the VeriFire Tools database.

**CLEAR** - This button will restore all programmable options on this worksheet to their defaults.

**NEXT** and **PRIOR** - These buttons allow you to step through the amplifiers programmed in the VeriFire Tools database.

**CLOSE** - This button will close the current service. If there are changes that have not been saved, VeriFire Tools will prompt you to do so.
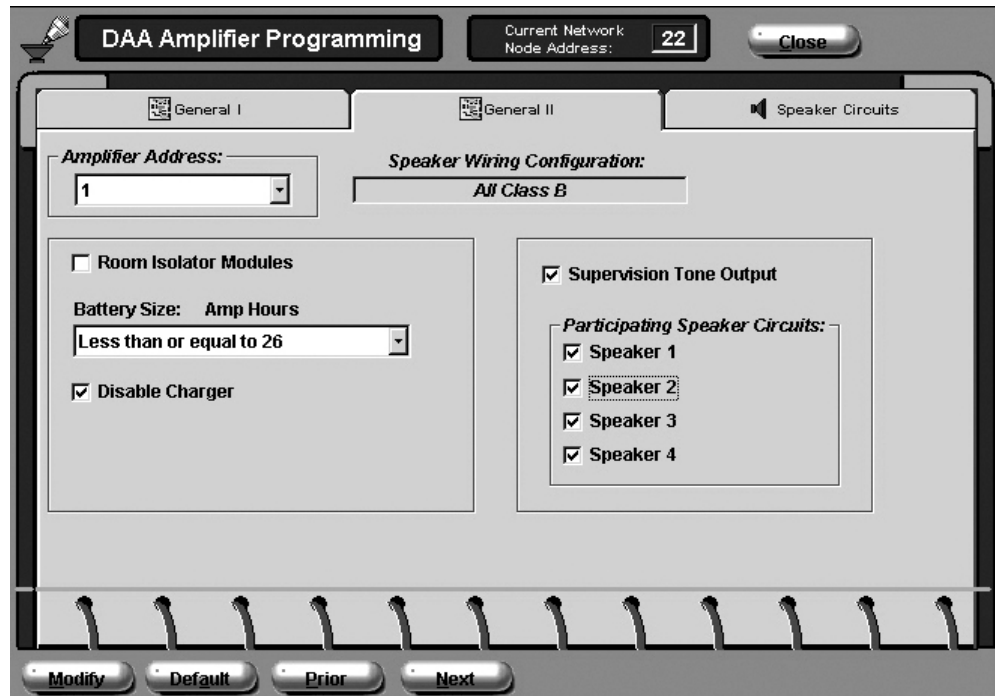
### General II



DAA_System_II_TabBW.jpg

**Figure 3.12  DAA Amplifier Programming Service – General II**

**AMPLIFIER ADDRESS** - Select the installed DAA to be programmed. (See page 45.)

**SPEAKER WIRING CONFIGURATION** - Displays the wiring configuration programmed at the first DAA worksheet. (See page 48.)

**ROOM ISOLATOR MODULES** – Future Use.

**BATTERY SIZE** – Select the size of the secondary power source.

**DISABLE CHARGER** – Check to disable the charger on this DAA. The charger should be disabled if this DAA is sharing batteries with at least one other DAA, and is not the DAA that will supply the battery charging. See "Battery Sharing" on page 88.

**NOTE:** Although 75 watt DAAs do not have a battery charger, this designation must still be made.

**SUPERVISION TONE OUTPUT** – Check to have the DAA send a 200 Hz tone to selected speakers when idle. A typical application would be with an ACT-2 audio coupling transformer. This feature is not for use in Class A applications.

**PARTICIPATING SPEAKER CIRCUITS** – Select which speaker circuits will play the supervision tone.

**MODIFY** - This button will save your changes to the VeriFire Tools database.

**CLEAR** - This button will restore all programmable options to their defaults.

**NEXT** and **PRIOR** - These buttons allow you to step through the amplifiers programmed in the VeriFire Tools database.

**CLOSE** - This button will close the current service. If there are changes that have not been saved, VeriFire Tools will prompt you to do so.

### Speakers
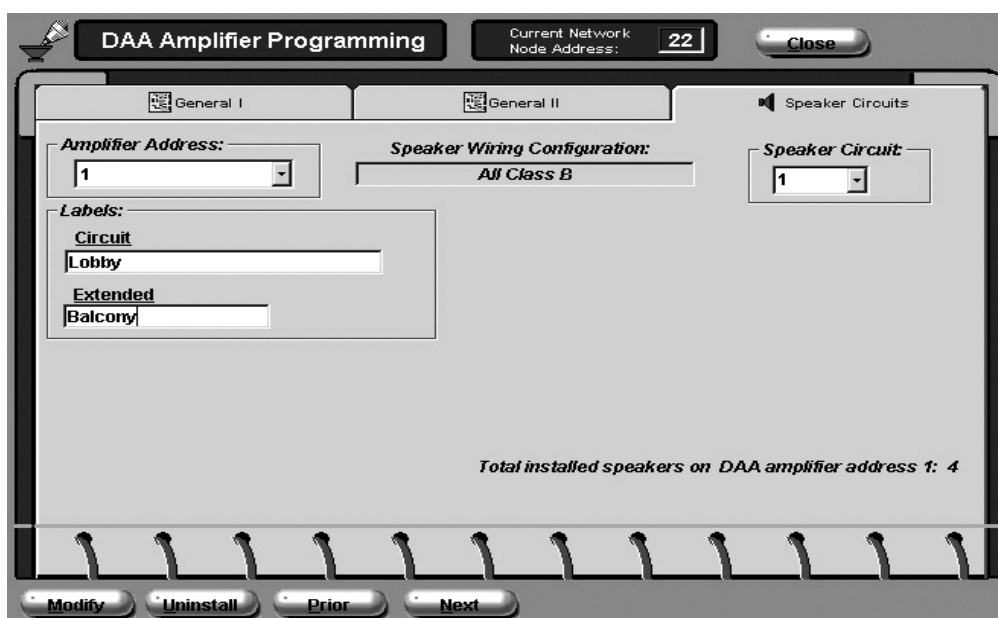


DAA_System_Speakers_TabBW.jpg

**Figure 3.13  DAA Amplifier Programming Service – Speaker Circuits**

**AMPLIFIER ADDRESS** - Select the installed DAA to be programmed. (See page 45.)

**SPEAKER WIRING CONFIGURATION** - Displays the wiring configuration programmed at the first DAA worksheet. (See page 48.)

**SPEAKER CIRCUIT** - Select the speaker circuit to be programmed.

### Labels

**CIRCUIT** – Enter up to 20 characters to identify this speaker circuit.

**EXTENDED** – Enter up to an additional 12 characters for more specific identification of the speaker circuit.

The total number of installed speaker circuits on the selected DAA is listed on the lower right hand side of the service form.

**MODIFY** - This button will save your changes to the VeriFire Tools database.

**UNINSTALL** - This button will delete that speaker circuit from the VeriFire Tools database.

**NEXT** and **PRIOR** - These buttons allow you to step through the speaker circuits programmed in the VeriFire Tools database.

**CLOSE** - This button will close the current service. If there are changes that have not been saved , VeriFire Tools will prompt you to do so.

### 3.3.3 Audio Message Programming

Up to 1000 message sequences may be created using a sound library supplied with VeriFire Tools and/or separate sound files created through the recommended Goldwave Digital Audio Editor.

📄 **NOTE:** The CD booklet included with the VeriFire Tools CD outlines the equipment requirements for creating a sound library. Use the equipment recommended in this booklet.

VeriFire Tools uses a "drag and drop" interface to easily sequence the sounds.

#### Message Segments

Message segments are sound files that can be used as part of a message sequence. The number of message segments that may be stored is relative to their size, fidelity, and the JDVC board used (JDVC or JDVC-EM/F/SF).

Use the Message Segment form illustrated in Figure 3.14 to select and catalog the sound files that will be used.

📄 **NOTE:** The digital audio system uses files in specific .wav formats as described below.

Acceptable .wav file formats are as follows:

- Standard quality - 11.025 kHz sampling rate, 8 bit $\mu$-law, mono.
- High quality - 44.1 kHz sampling rate, 16 bit PCM, mono.



**Figure 3.14  Audio Message Programming Service – Message Segments**

- AUDIO TYPE - Fidelity and storage capacity based on the fidelity selection and board type at the first JDVC form (See "Common Settings" on page 40) is displayed as a reminder in the AUDIO TYPE field at the top of the form.

- OPEN EXPLORER - Click this button to open the Windows Explorer. Import sound files into the segment library by dragging and dropping them from your PC. When a file is entered into the library it is assigned a segment number. The segment library may contain up to 1000 message segments.

> **NOTE:** Sound files used as message segments must be accessible when downloading to a JDVC.
> • They must be consistently mapped  - that is, the path must remain unchanged if a database is exported onto another PC.
> • When accessed from external devices such as a CD drive, copy audio files onto your PC's hard drive, *or* always ensure that external media containing these files is in the drive when downloading to the JDVC.

- Total duration time will display in the top right corner of the service form. Specific message segment lengths are displayed in the Available Message Segments section of the Message Sequences screen. (See Figure 3.15 on page 53)
  Use the arrow keys to the right to re-assign a file's segment number.

- Click the OPEN AUDIO EDITOR button to open the Goldwave sound editor. Create and/or edit sound files with this software program.

- Listen to a selected .wav file by clicking on PLAY SELECTION button at the bottom of the service.

**PROGRAM** - This button will save your changes to the VeriFire Tools database.

**CLOSE** - This button will close the current service.  If there are changes that have not been saved (by pressing the **PROGRAM** button), VeriFire Tools will prompt you to do so.

### Message Sequences

Build audio message sequences by combining message segments and sequence commands.



Mess_SequenceBW.jpg

**Figure 3.15  Audio Message Programming Service – Message Sequences**

To create an audio sequence:

1.  Select a sequence number from the AUDIO SEQUENCES field. Assign the sequence an ALERT, EVAC, or OTHER message type.

**NOTE:**  Only ALERT and EVAC may be used when a JDVC with DVC-AO is directly connected to an IFC2-640 panel.

2.  Type a 20-character description of the audio sequence in the LABEL field, if desired.
3.  Drag and drop message segments and sequence commands into the SEQUENCE: field. Segments may be grouped together and the group or individual segment may be played up to 14 times. An individual segment or group may also be commanded to play forever.

**NOTE:**  For public mode signaling, messages activated during fire events must repeat indefinitely (the PLAY FOREVER command must be used).
For private mode signaling, fire alarm messages may be of finite length (the PLAY $\underline{X}$ TIMES command may be used), but they must then be assigned the "OTHER" category.
Security, supervisory, trouble, all finite-length messages, and all messages not activated by fire events must be assigned "OTHER" in VeriFire Tools.

Each PLAY... command (PLAY $\underline{X}$ TIMES, PLAY FOREVER) must be completed with an END PLAY command. Segments without a PLAY.../END PLAY command will play only once. Note that the PLAY... and END PLAY commands are comparable to open (PLAY $\underline{X}$ TIMES, PLAY FOREVER) and closed (END PLAY) brackets of a logic equation.

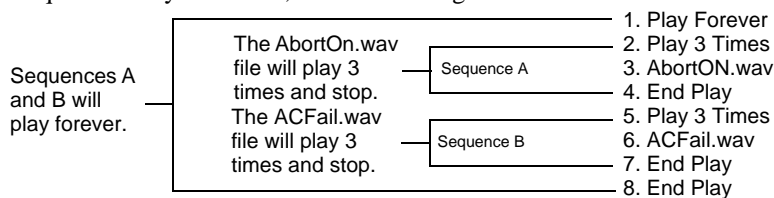Sequences may be nested, as shown in Figure 3.16.



**Figure 3.16  Nested Sequence**

A sequence may have up to 125 steps.

**CLEAR SEQUENCE** - Click this button to delete all steps in a sequence.

**PLAY SEQUENCE** - Click this button to listen to and review the sequence as a test. During this test, the PLAY FOREVER command will only play 200 times. When this sequence is activated in a non-test situation, PLAY FOREVER will play indefinitely.

**PROGRAM** - This button will save your changes to the VeriFire Tools database.

**CLOSE** - This button will close the current service.  If there are changes that have not been saved (by pressing the **PROGRAM** button), VeriFire Tools will prompt you to do so.

### Inputs

In the digital audio system, each input source, live or recorded, is assigned a fixed input number and a programmable priority number. (See Table 3.1.) Use the Inputs service to program each input's priority. The lower the priority number, the higher the priority.



This screen will also display a fixed input number column to the left of the Priority column. To view this column, place the cursor on the column wall left of the priority column and pull it out.

**Figure 3.17  Audio Message Programming Service – Inputs.**

**ARROW KEYS** - Use to reassign the priority of an individual input.

**RENUMBER** - Click the button to sequentially reassign priorities to the all inputs.

**RESTORE DEFAULTS** - Click this button to re-apply default priorities to all inputs. See Table 3.1 for defaults.

**PROGRAM** - This button will save your changes to the VeriFire Tools database.

**CLOSE** - This button will close the current service.  If there are changes that have not been saved (by pressing the **PROGRAM** button), VeriFire Tools will prompt you to do so.

| Input Number | Input Source | Default Priority |
|:---:|:---|:---:|
| 1 | Local Microphone Page* | 1 |
| 2 | Network Microphone Page | 2 |
| 3 – 15 | RESERVED | — |
| 16 | Local Telephone Page* | 16 |
| 17 | Network Telephone Page | 17 |
| 18 – 30 | RESERVED | — |
| 31 | Message Sequence 1 | 31 |
| 32 | Message Sequence 2 | 32 |
| • • • | • • • | • • • |
| 1029 | Message Sequence 999 | 1029 |
| 1030 | Message Sequence 1000 | 1030 |
| 1031 – 1033 | RESERVED | — |
| 1034 | RESERVED | — |
| 1035 | Network Workstation | 1035 |
| 1036 | RESERVED | — |
| 1037 | Network Remote Workstation | 1037 |
| 1038 | Local RM-1 | 1038 |
| 1039 | Network RM-1 | 1039 |
| 1040 | Local AUXB | 1040 |
| 1041 | Network AUXB | 1041 |
| 1042 | RESERVED | — |
| 1043 | Local AUXA | 1043 |
| 1044 | Network AUXA | 1044 |
| * Local Microphone Page will *always* take priority over Local Telephone Page. | | |

**Table 3.1  Default Input Priorities**

## 3.3.4  Logic Equation Builder

The Logic Equation Builder allows the programmer to set up Control-by-Event requirements for audio events.



DVC_LEBBW.jpg

**Figure 3.18  Logic Equation Builder Service**

The Logic Equation Builder is an easy way to enter logic equations for the audio system. Use the "point and click" method to select all available operators and operands and view your work as you build the equation in the window at the top of the screen. Use the Program Validation Service to check your work.

### The Edit Section

**UNDO** - This button will undo the last function that was executed. You can press the UNDO button until the entire entered equation is erased.

**REDO** - This button will reverse the action of the UNDO button. The REDO button can be pressed until the entire function is recovered.

**ERASE** - This button will clear the current equation so that a new equation can be entered. Once the ERASE button is pressed, both the UNDO and REDO button will become unavailable.

**COPY** and **PASTE** - These buttons can be used to copy an equation in whole or in part and paste it into another logic zone.

**LABEL** - Use this field to enter a label (up to 100 characters) for the logic equation. Labels are accessible by viewing the database using VeriFire Tools.

### The Functions Section

The Functions section lists the available operators to use. For every step that can be performed, the available choices will be left enabled, while unavailable options will be grayed out.

### The Points Section

The Points section allows the user to select operands that can be added to an equation. Pressing one of these buttons will bring up a dialog box so that you may enter the appropriate address for the device or zone.

### Logic Equation Spreadsheet

Use the Logic Equation Spreadsheet to select, view, or navigate through up to 2000 (ZL1 – ZL2000) logic equations.

### Action Commands

**MODIFY** - Clicking this button will add the selected equation to the database.

**CLEAR** - Clicking this button will delete the selected equation from the database.

**NEXT** and **PRIOR** - Clicking these buttons cycle through the equations.

**REFRESH** -Clicking this button will restore the current logic equation from the database.

**SPREADSHEET** - Clicking this button displays the Logic Equation Spreadsheet in a separate screen.

**CLOSE** - This button will close the current service.  If there are changes that have not been saved, VeriFire Tools will prompt you to do so.

## 3.3.5  Prioritized Audio Matrix (PAM) Programming

### Overview

The PAM point spreadsheet displays all programmed inputs and outputs except backup DAAs. Inputs are represented by rows, while outputs are represented by columns. A PAM point is the intersection between an input and an output. A PAM point address describes its input (I) number, amplifier (A) number and speaker circuit (S) number (IxxxxAxxSx). Local JDVC analog outputs use amplifier number zero. Where live paging over Noti-Fire-Net is employed, Noti-Fire-Net is considered an output on the source JDVC. The points associated with the intersection of the live inputs with Noti-Fire-Net have a PAM point address of IxxxxNET, where I is the input number.

Following are the means to activate a PAM point:

- Logic Equation
- JDVC Alarm bus
- ACS control (ACS mapping on IFC2-3030, or JNCA-2).
- Point control ("Force On"/"Force Off" commands - IFW, JNCA-2, IFC2-640 or IFC2-3030)
- DVC-KD (Pre-set paging buttons (ALL CALL, etc) and user-programmed buttons).

The PAM Programming  screen shown in Figure 3.19 allows the programmer to select and program points for activation by either a specific logic equation or the JDVC alarm bus. ACS control, point control and DVC-KD activators do not display on this screen.

The programmer may also program the point for signal silence participation and switch inhibit.

Outputs are represented by columns.

*Example:* Output circuit for DAA 4 S3 Column. The darkened cell in the column is a PAM point in the row designated Input 31, and has a PAM point address of I31A4S3. When Logic Equation 3 (the "3" that is in the darkened cell) is activated, Input 31 will broadcast Sequence 1 on this output. This output can also be activated by other PAM points in its column.

Inputs are represented by rows.

*Example:* Input 31 Row. The selected cell in the row is a PAM point. When Logic Equation 3 is activated, Speaker Circuit 3 on the DAA at Address 4 will broadcast Sequence 1.

**PAM Programming Service**   Current Network Node Address: 22   Close   Program

| Input | Priority | Input Name | DAA-3 S4 | DAA-4 S1 | DAA-4 S2 | DAA-4 S3 | DAA-4 S4 | NET |
|---|---|---|---|---|---|---|---|---|
| | | | | | **Output Circuits** | | | |
| 1 | 1 | Local Mic | | | | | | |
| 2 | 2 | Network Mic | | | | | | |
| 16 | 16 | Local Tel | | | | | | |
| 17 | 17 | Network Tel | | | | | | |
| 31 | 31 | Sequence 1 | | 3 | 3 | **3** | 3 | |
| 32 | 32 | Sequence 2 | | | Bus | | | |
| 33 | 33 | Sequence 3 | | | | 1 | | |
| 1035 | 1035 | Network Workstation | | | | | | |
| 1037 | 1037 | Network Remote Workstation | | | | | | |

Copy   Paste

Point: I31 A4 S3

**Available Logic Equations:**

| In Use | Number | Logic Equation | Comment |
|---|---|---|---|
| ✓ | 1 | AND(N1L10D15,N1L10M25) | |
| ☐ | 2 | TIM(WE,22:00:00,23:00:00) | Break Bells |
| ✓ | 3 | OR(N100L2M10) | |
| ☐ | 4 | OR(N100L2M11) | |
| ☐ | 5 | OR(N100L2M12) | |
| ☐ | 6 | OR(N100L2M13) | |
| ☐ | 7 | OR(N100L2M14) | |

☐ Alarm Bus Map

Logic Equation: 3

Silenceable:
No

☐ Switch Inhibit

PAM point address

PAM point activation programming options

NEW_PAM_PTsBW.jpg

**Figure 3.19  PAM Programming Screen**

### Network Paging

When "Paging to Network" is selected in the JDVC System Programming Service (see page 40), the JDVC is configured to send live audio to Noti-Fire-Net for audible output by other JDVCs on the network. The live audio present on the network can be used as input audio by another JDVC on Noti-Fire-Net, and may be played on any output circuit on that JDVC.

Inputs designated as "Local" in the PAM of the source JDVC become "Network" inputs of the same type in the PAM of all other network JDVCs. (See Table 3.2.)

| Input Name on Source JDVC | Input Name on Other Network JDVC |
|---|---|
| Local Mic | Network Mic |
| Local Tel | Network Tel |
| Local RM-1 | Network RM-1 |
| Local Aux B | Network Aux B |
| Local Aux A | Network Aux A |

**Table 3.2    Local and Network Inputs**

A JDVC configured for network audio output may be commanded to transmit a live audio message to Noti-Fire-Net in a variety of ways. An MIC-1 Local Mic will always (provided the audio channel is free, or the input has sufficient priority to preempt another audio source using the channel) transmit its audio to Noti-Fire-Net when the Push-to-talk button on the microphone is depressed.

Live input from other than the MIC-1 may be activated to transmit to Noti-Fire-Net using "Enable Paging from _input name_ " buttons programmed to an annunciator button on an NCA-2, NFS2-3030 or DVC-KD. A pre-defined button labeled "Enable Telephone Page" exists on the DVC-KD for this purpose.

Live inputs may also be activated to Noti-Fire-Net using a logic equation. This programming is done in the PAM Programming Service, by mapping the logic equation to the NET column of the desired local input. Refer to Figure 3.19 on page 58, upper right, to view the NET column. The NET column appears only when "Paging to Network" is selected in the DVC Programming Service.

**Network Paging From this JDVC, RM-1 Example**

The RM-1 at this JDVC is configured with an JNCA-2 or IFC2-3030 annunciator (one button with a mode of ENABLE PAGING FROM RM-1, one button with a mode of ALL CALL)  and programmed to transmit an ALL CALL message to other nodes.

When the RM-1 is activated for network paging (by first pressing the two annunciator buttons, then the microphone's push-to-talk button), it will send a live ALL CALL message out to Noti-Fire-Net through the PAM's Local RM-1 input (Input 1038).
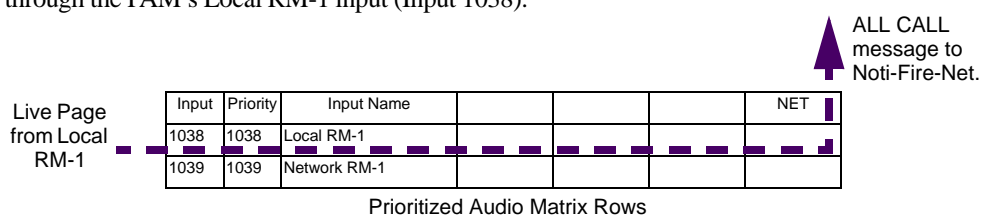


**Figure 3.20  Network Paging *from* This JDVC**

**Network Paging to this JDVC, RM-1 Example**

An RM-1 at another node initiates a live ALL CALL page over Noti-Fire-Net to this JDVC.

The message will be sent to the target output(s) through the PAM's Network RM-1 Input (1039)
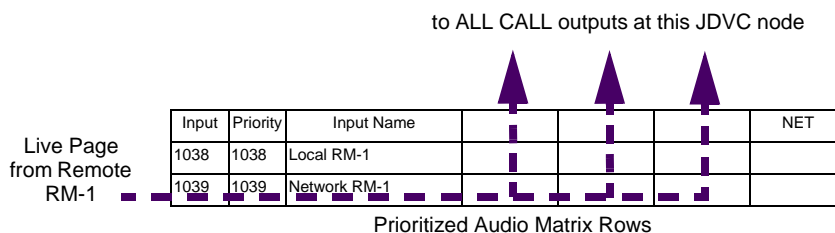


**Figure 3.21  Network Paging *to* This JDVC**

## Message Overrides

When a PAM point is activated, its input will broadcast on its output. If more than one PAM point activate for a particular output, the PAM point with the highest priority input will play first, and it will pre-empt active messages of lesser priority. The pre-empted message will be set to either pending or turned off, as shown in Table 3.3 below.

|  | Live | | Evac | | Alert | | Other | |
|---|---|---|---|---|---|---|---|---|
|  | PAM point turned on by logic equation | PAM point turned on by user (annunciator button or Alter Status) | PAM point turned on by logic equation | Turned on by user (annunciator button or Alter Status) | PAM point turned on by logic equation | Turned on by user (annunciator button or Alter Status) | PAM point turned on by logic equation | Turned on by user (annunciator button or Alter Status) |
| **Live** | Pending | OFF | Pending | OFF | Pending | OFF | Pending | OFF |
| **Evac** | Pending | OFF | Pending | OFF | OFF | OFF | OFF | OFF |

**Table 3.3  Operation of Message Overrides**

| | Live | | Evac | | Alert | | Other | |
|---|---|---|---|---|---|---|---|---|
| | **PAM point turned on by logic equation** | **PAM point turned on by user (annunciator button or Alter Status)** | **PAM point turned on by logic equation** | **Turned on by user (annunciator button or Alter Status)** | **PAM point turned on by logic equation** | **Turned on by user (annunciator button or Alter Status)** | **PAM point turned on by logic equation** | **Turned on by user (annunciator button or Alter Status)** |
| **Alert** | Pending | OFF | Pending | OFF | Pending | OFF | OFF | OFF |
| **Other** | Pending | OFF | Pending | OFF | Pending | OFF | Pending | OFF |

**Table 3.3   (Continued)Operation of Message Overrides**

**Live** - an input that was not created by Audio Sequence programming (that is, paging, telephone communication).

**Evac, Alert, Other** - Message type assigned to an audio sequence through Audio Sequence programming.

**Pending** - means the new input will pre-empt the active input, but will allow that input to resume its broadcasting once the new input has completed its broadcast.

**OFF** - means the new input will pre-empt the active input, and will turn it off.

Example:

A live page with a priority of one (1) occurs while an "Evac" message, initiated by a logic equation, is broadcasting. The live input has a higher priority than the "Evac" message. Table 3.3 shows that the new live message will cause the "Evac" message to be placed in a pending state. (The table cell where the "Live" row intersects with the "Evac, PAM point turned on by logic equation" column says "Pending".) The "Evac" message will resume once the live page is completed.

## Programming a PAM point

Select a cell at the intersection of an input and an output. The point address will display at the lower right corner of the service. Choose how the PAM point will activate (either by alarm bus mapping or a logic equation), and whether signal silence participation and switch inhibit will be enabled.

**ALARM BUS MAP** – Check to have the PAM point activate when the JDVC alarm bus is activated and at least one of its mapped nodes is off-line. See page 42 for alarm bus programming.

**LOGIC EQUATION** – Enter a logic equation to have the PAM point activate when the conditions set in the logic equation are met. Choose from the logic equations displayed in the "Available Logic Equations" part of the screen. The Logic Equation Builder on page 56 describes how to set up these logic equations.

**SILENCEABLE**

This field determines whether the user can manually silence a PAM point. Based on the value chosen from the list below, a Signal Silence command at a network annunciator, or at a single-panel IFC2-3030 directly connected to a JDVC, will silence a PAM point.

| NO | Not manually silenceable | |
|---|---|---|
| YES - RESOUND FIRE | Silenceable, resound on fire alarm events | Network and Local Resound |
| YES - RESOUND SUPERV | Silenceable, resound on supervisory events | Network and Local Resound |
| YES - RESOUND SECURITY | Silenceable, resound on security event | Network and Local Resound |
| YES - RESOUND TROUBLE | Silenceable, resound on local JDVC trouble event | Network and Local Resound |

**NOTE:**   Recorded messages programmed to activate based on security events must be programmed as non-silenceable; N0 must be selected.

**SWITCH INHIBIT** – When this selection is enabled, the PAM point will disregard any ACS control.

## 3.3.6 Reports

Printed reports can be generated from VeriFire Tools. The selections can be viewed from the drop-down Reports Menu on the menu bar. The reports include the following:

- **SYSTEM** - Includes the information entered in the DVC System Programming Service screens.
- **DAA** - Includes the information entered in the DAA Amplifier Programming screens.
- **AUDIO MESSAGE** - Includes the information entered in theAudio Message Programming Service screens.
- **PAM** - Includes the information entered in the PAM Programming Service screens.
- **LOGIC EQUATIONS** - Lists all logic equations.

# 3.4  Programming JDVC General Zones for Retrofits

The JDVC has 105 general zones (Z000 - Z104) that apply to DVC-AO outputs only. Labels can be created for them using the  JDVC System Programming Service. See "JDVC General Zones" on page 47.

These zones may be used in FACP logic equations to turn outputs on and off for messages or pages from the DVC-AO. Table 3.4 indicates the functions of each general zone.

| General Zone | Function |
|---|---|
| Z000 | Automatically activates when any input is played over any of the DVC-AO outputs. |
| Z001 | Automatically activates when any message sequence with the PAM input range of 31 through 40 activates. |
| Z002 | Automatically activates when any message sequence with the PAM input range of 41 through 50 activates. |
| Z003 | Automatically activates when any message sequence with the PAM input range of 51 through 60 activates. |
| .......... | ........ |
| Z100 | Automatically activates when any input with the PAM input range of 1021 through 1030 activates. |
| Z101 | Automatically activates when any input is played over DVC-AO Analog Output 1. |
| Z102 | Automatically activates when any input is played over DVC-AO Analog Output 2. |
| Z103 | Automatically activates when any input is played over DVC-AO Analog Output 3. |
| Z104 | Automatically activates when any input is played over DVC-AO Analog Output 4. |

**Table 3.4  JDVC General Zone Functions**

Programming Example:

A network consists of an IFC2-3030 (Node 1) with an XPIQ and a JDVC (Node 2) with a DVC-AO connected to the XPIQ. When detector L01D001 on the IFC2-3030 goes into alarm, Sequence 1 in the JDVC will play over Analog Output 1 to an XPIQ output.  When the detector leaves the alarm state, the XPIQ output will turn off.

To program:

- Program the JDVC as follows:
  - Create a logic zone (ZL1 in this example) with the detector's address of N001L01D001.
  - Enter ZL1 into the PAM point at Audio Sequence 1 Input row (Input 31 in this example) and Analog Output 1 column.
- Create an IFC2-3030 logic zone (ZL5 in this example) with an equation that includes the following:
  - N002Z001 - the JDVC's general zone 1 that will activate when Input 31 (Sequence 1) activates.
  - N002Z101 - the JDVC's general zone 101 that will activate when any message is played over Analog Output 1 of the DVC-AO.
- Add ZL5 to the zone map of the control module point of the desired XPIQ output.

# 3.5  Program Validation Service

The message sequences created through audio message programming are prioritized in this part of VeriFire Tools programming.

Use the Program Validator before you attempt to download a new database. This function will check the validity of the program that was created for a JDVC. VeriFire Tools checks the following items:

- Check message segments. Any message segments that are not in the correct format will be flagged.
- Check message sequences. Any message segments in the sequences that are not programmed will be flagged. Any message segments which are programmed, but the wave file does not exist, will also be flagged. Any message sequence that are not syntactically correct will also be flagged.
- Check logic equations. If a logic equation specifies a logic zone that does not have a logic equation, an error is flagged. When a logic equation is entered, forward reference checking is performed so that a logic equation cannot contain a logic zone that is the same or greater than the logic zone being programmed.
- Check PAM points. Any referenced logic zones that are not programmed will be flagged. In addition, these unreferenced logic zones will also be removed from the database. Any PAM points that reference the alarm bus will be flagged if the alarm bus does not have any nodes mapped.
- Check logic zone references. Any logic zones that have a logic equation specified must appear in another logic equation or in the PAM. If it does not appear in any of these locations, an error is flagged with a note that the logic zone may be used in another node's zone map or logic equation.
- Check local emergency and non-emergency message segments. If the message segment is not programmed, it will be flagged. If the message segment is programmed, but the .wav file does not exist, it will also be flagged.
- Check pre-announce messages. If the message sequence is empty, it will be flagged.

If the Program Validator detects errors in the database, a warning message will appear and the Program Validation Results screen will display all detected errors. Clicking on each parameter listed under the Cause or Effect column will bring up the appropriate programming screen for editing.

**VALIDATE** - Click this button to validate the database.

**SAVE** - Click this button saves the validation results to an HTML file.

**PRINT** - Click this button prints the validation results.

**CLOSE** - Click this button closes the current service.

# Section 4: JDVC Operation

## 4.1  Using the DVC-KD Keypad

When a -JDVC Series board is utilized with a DVC-KD keypad, it operates with a network annunciator or IFC2-3030 as an audio command center, accepting and routing live paging, with LED status indicators for paging and other functions.

The DVC-KD contains push-button switches and indicators of two types:

- Those with pre-set functionality, all located along the two left columns.
- Twenty-four user-programmable buttons similar to those on the ACM-24AT annunciators, all located along the two right columns.

**LEFT COLUMNS**

Pre-defined buttons.
See descriptions below this figure.

**RIGHT COLUMNS**

User-programmable buttons. Refer to "JDVC System Programming" on page 40.



Buttons 1 - 12. Button 1 is at the top, button 12 is at the bottom.

Buttons 13 - 24. Button 13 is at the top, button 24 is at the bottom.
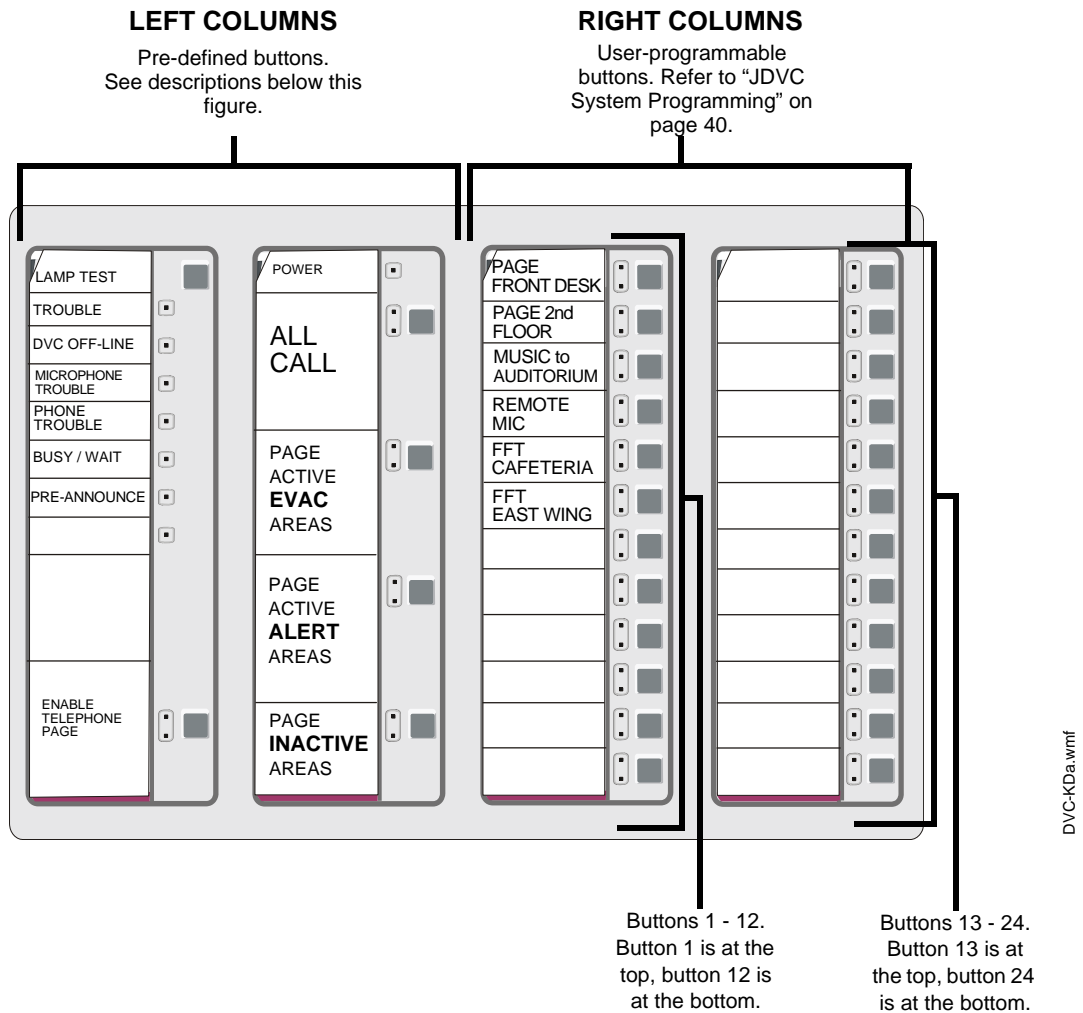
**Figure 4.1  DVC-KD Keypad**

### 4.1.1  Pre-defined Buttons/Indicators

#### Buttons

**LAMP TEST**

Press and hold to perform a lamp test of all the LEDs on the keypad. LEDs on the JDVC board will also be tested with the following exceptions: Reset, EFA, EFB, TXA, TXB, RXA and RXB.

**ENABLE TELEPHONE PAGE**

Press this button to engage/disengage `ALL CALL`, `PAGE ACTIVE EVAC AREAS`, `PAGE ACTIVE ALERT AREAS` and `PAGE INACTIVE AREAS` paging from the JDVC's TELH-1 telephone handset or an FFT on a JDVC or DAA riser.

**NOTE:** The ALL CALL, PAGE ACTIVE EVAC AREAS, PAGE ACTIVE ALERT AREAS, and PAGE INACTIVE AREAS buttons will function only when "Local Control" has been selected in VeriFire Tools programming.

**NOTE:** A local microphone page, initiated at the JDVC's MIC-1, will pre-empt a local telephone page from the JDVC's TELH-1 or an FFT on the JDVC or a DAA riser.

**ALL CALL**

Press this button to initiate ALL CALL paging. JDVC nodes that will receive the ALL CALL message are determined by VeriFire Tools programming. The green "active" LED will light if any of the mapped nodes are online. When one or more nodes are off-line, the yellow "trouble" LED will blink. If both the green and yellow LEDs are lit, paging can still proceed, broadcasting to all mapped nodes that are online.

**PAGE ACTIVE EVAC AREAS**

Press this button to initiate paging to active evacuation areas. Nodes that will receive the PAGE ACTIVE EVAC AREAS message are determined by VeriFire Tools programming. The green "active" LED will light if any of the mapped nodes are online. When one or more nodes are off-line, the yellow "trouble" LED will blink. If both the green and yellow LEDs are lit, paging can still proceed, broadcasting to all mapped nodes that are online.

**PAGE ACTIVE ALERT AREAS**

Press this button to initiate paging to active alert areas. Nodes that will receive the PAGE ACTIVE ALERT AREAS message are determined by VeriFire Tools programming. The green "active" LED will light if any of the mapped nodes are online. When one or more nodes are off-line, the yellow "trouble" LED will blink. If both the green and yellow LEDs are lit, paging can still proceed, broadcasting to all mapped nodes that are online.

**PAGE INACTIVE AREAS**

Press this button to initiate paging to inactive areas. Nodes that will receive the PAGE INACTIVE AREAS message are determined by VeriFire Tools programming. The green "active" LED will light if any of the mapped nodes are online. When one or more nodes are off-line, the yellow "trouble" LED will blink. If both the green and yellow LEDs are lit, paging can still proceed, broadcasting to all mapped nodes that are online.

## 4.1.2  LED Indicators

**Trouble** - Illuminates during system initialization and when there are any troubles at the JDVC node.

**DVC Offline** - Illuminates when the JDVC is not providing fire protection. For example, there is a problem with the JDVC board that requires service.

**Microphone Trouble** - Illuminates when a connection failure exists, or when a JDVC microphone page has been initiated but no microphone activity has occurred for 28 seconds.

**Phone Trouble** - Illuminates when a connection failure exists, or when a JDVC telephone page has been initiated but no telephone activity has occurred for 28 seconds.

**Busy/Wait** - Illuminates when a code or database download from the JDVC to DAAs is in effect.

**Page Inhibited** - Another node has assumed paging control and locked out paging from this JDVC. This occurs when the JDVC requests paging permission over Noti-Fire-Net from the DCC node, and the DCC has not granted it. Also illuminates when the Page Inhibit feature is active.

**Pre-Announce** - Illuminates while the pre-announce sequence is playing before paging from the JDVC's MIC-1 local microphone.

### 4.1.3  24 User-programmable Buttons

These buttons are programmed in VeriFire Tools to perform annunciator-type control, monitor and telephone functions within the system.

## 4.2  Paging

The MIC-1 microphone, TELH-1 telephone handset, RM-1 remote microphone, and AUXA and AUXB inputs can perform paging operations to their local JDVC or across Noti-Fire-Net to another JDVC.

FFTs on the JDVC/DAA FFT risers can perform paging operations to the JDVC node or the network.

### 4.2.1  MIC-1 Microphone Paging

To page using the MIC-1:

1.  Remove the microphone from its cradle.
2.  Press the DVC-KD button for the desired paging zone (for this example, ALL CALL).  The green LED at the ALL CALL button will light steady.
3.  If there is a pre-announce tone, it will play at this time and the Pre-Announce LED will light as it plays. Wait until this LED goes off before paging.
4.  Press the push-to-talk button on the microphone.
5.  Page.
6.  Release the push-to-talk button on the microphone.
7.  Press the ALL CALL button to disengage the ALL CALL function. The green LED will turn off.

**NOTE:**   The DVC-KD Microphone Trouble LED will illuminate if paging is initiated but there is no activity for 28 seconds.

### 4.2.2  TELH-1 Telephone Paging

To page using the TELH-1:

1.  Remove the handset from its cradle.
2.  Press the ENABLE TELEPHONE PAGE button. The green LED at the button will light steady.
3.  Press the DVC-KD or annunciator button for the desired paging zone (for this example, ALL CALL). The green LED at the ALL CALL button will light steady.
4.  If there is a pre-announce tone, it will play at this time. Wait until it ends before paging.
5.  Press the handset's push-to-talk button.
6.  Page.
7.  Release the push-to-talk button on the TELH-1.

8. Press the ENABLE TELEPHONE PAGE button to disengage the ALL CALL function. The green LEDs at the ALL CALL and ENABLE TELEPHONE PAGE buttons will turn off.

**NOTE:** The DVC-KD Telephone Trouble LED will illuminate if paging is initiated but there is no activity for 28 seconds.

## 4.2.3  RM-1 Remote Microphone Paging

To page using a JDVC's RM-1:

### Configured with Annunciator

1. Remove the microphone from its cradle.

2. Press the annunciator button(s) mapped to the RM-1.

   - Specific Local Paging (when there is no ENABLE PAGING button) - Press the single button for the specific area to be paged (ie. Cafeteria) to enable paging. The annunciator LED will blink.

   - Specific Network Paging - Press the ENABLE PAGING button, then press the button for the specific area to be paged (i.e., Cafeteria, East Wing). The annunciator LEDs will blink.

   - General Local and General Network Paging - Press the ENABLE PAGING button, then press the button for the type of paging desired (ALL CALL, PAGE EVAC, PAGE ALERT , PAGE INACTIVE) The annunciator LEDs will blink.

3. If there is a pre-announce tone, it will play at this time. Wait until it ends before paging.

4. Press the push-to-talk button.

5. Page.

6. To end the page, release the push-to-talk button and press the *paging function* button (not the ENABLE PAGING button) to deactivate. The annunciator LED(s) will turn off.

### Configured with Keyswitch

1. Remove the microphone from its cradle.

2. Insert and turn the key in the keyswitch.

3. If there is a pre-announce tone, it will play at this time. Wait until it ends before paging.

4. Press the push-to-talk button.

5. Page.

6. To end the page, release the push-to-talk button and turn the key back to its original position.

## 4.2.4  AUXA/AUXB Paging

To page using a  JDVC's AUXA or AUXB inputs:

1. Activate the AUXA or AUXB input.

2. Press the annunciator button(s) mapped to it.

   - Specific Local Paging (when there is no ENABLE PAGING button) - Press the single button for the specific area to be paged (ie. Cafeteria) to enable paging. The annunciator LED will blink.

   - Specific Network Paging - Press the ENABLE PAGING button, then press the button for the specific area to be paged (i.e., Cafeteria, East Wing). The annunciator LEDs will blink.

   - General Local and General Network Paging - Press the ENABLE PAGING button, then press the button for the type of paging desired (ALL CALL, PAGE EVAC, PAGE ALERT , PAGE INACTIVE) The annunciator LEDs will blink.

3. Press the push-to-talk button.

4. Page.

5. To end the page, release the push-to-talk button and press the *paging function* button (not the ENABLE PAGING button) to deactivate. The annunciator LED(s) will turn off.

## 4.2.5  FFT Paging

To page using an FFT handset on the JDVC's FFT riser or the FFT riser on one of its DAAs, follow the instructions below.

### Configured with Annunciator

1. Activate the handset for FFT communication by lifting the receiver or plugging in the phone jack.

2. Press the annunciator button(s) mapped to the FFT.
   - Specific Local Paging (when there is no ENABLE PAGING button) - Press the single button for the specific area to be paged (ie. Cafeteria) to enable paging. The annunciator LED will blink.
   - Specific Network Paging - Press the ENABLE PAGING button, then press the button for the specific area to be paged (i.e., Cafeteria, East Wing). The annunciator LEDs will blink.
   - General Local and General Network Paging - Press the ENABLE PAGING button, then press the button for the type of paging desired (ALL CALL, PAGE EVAC, PAGE ALERT , PAGE INACTIVE) The annunciator LEDs will blink.

3. Press the push-to-talk button.

4. Page.

5. To end the page, release the push-to-talk button and press the *paging function* button (not the ENABLE PAGING button) to deactivate. The annunciator LED(s) will turn off.

### Configured with Keyswitch

1. Activate the handset for FFT communication by lifting the receiver or plugging in the phone jack.

2. Insert and turn the key in the keyswitch.

3. Press the push-to-talk button.

4. Page.

5. To end the page, release the push-to-talk button and turn the key back to its original position.

### Not Configured for Paging

1. May request the paging function from the JDVC operator once they have established digital FFT communication. The JDVC operator must press the ENABLE TELEPHONE PAGE button, then the paging function button.

2. Press the push-to-talk button to page.

3. When paging is complete, release the push-to-talk button. The JDVC operator must press the ALL CALL button, then the ENABLE TELEPHONE PAGE button to end the page.

# 4.3  JDVC Series Firefighter's Telephone Network Communication

## 4.3.1  Description

The JDVC Series firefighter's telephone network consists of the JDVC's own analog riser, analog risers that exist on any of the (up to) 32 DAA audio amplifiers connected to the JDVC, and the Digital Audio Loop (DAL) that connects them all at the digital audio ports

FFT network activation (that is, when a handset on one of these risers is granted a connection by the operator and JDVC) allows intercommunication between the JDVC's FFT analog riser and up to four other dynamically-changing sets of FFT risers on the DAAs. These risers are added to the network on a first-come, first-served basis by the JDVC. Each riser can sustain seven active FFT

handsets, so 35 handsets may be active within the network at the same time. If this number is exceeded, a short circuit trouble will be indicated by the JDVC; however, FFT communications will continue.

> **NOTE:** The FFT riser on the JDVC is always one of the five active risers. Four FFT risers can be active on DAAs at the same time.

> **NOTE:** The JDVC's TELH-1 connection (J8) always counts as one of the seven active FFT handsets on the JDVC, whether there is a TELH-1 handset connected to it or not.

## 4.3.2  Examples

Figure 4.2 and the text that follows gives an example of how activated analog FFT risers interact with the Digital Audio Loop (DAL).
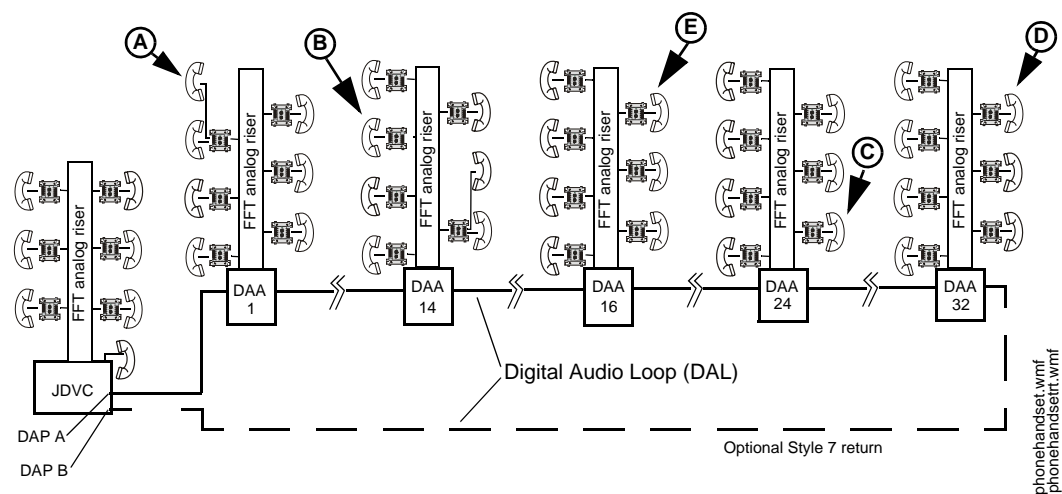


**Figure 4.2  Active JDVC Firefighter's Telephone Network**

1.  A firefighter at DAA 1 activates a handset (**A**) on the analog FFT riser by lifting the receiver or plugging in a phone jack. An operator grants the firefighter a connection.

    (**A**) will automatically be granted a Digital Audio Loop (DAL) connection.

    *[ 1 (DAA 1) analog riser + 1 (JDVC) analog riser = 2 risers interconnected on the DAL.]*

2.  Subsequently, firefighters at DAA 14 (**B**), DAA 24 (**C**), and DAA 32 (**D**) activate handsets and are granted connections by the operator.

    (**B**), (**C**), and (**D**) will automatically be granted DAL connections.

    *[4 (DAA 1, 14, 24 and 32) analog risers +1 (JDVC) analog riser = 5 risers - the maximum allowed - interconnected on the DAL.]*

3.  A firefigher at DAA 16 activates a handset (**E**) and is granted a connection by the operator.

    (**E**) will hear a ring tone on his handset.

    (**E**) will be placed in a queue for the next available connection, because the maximum of 5 risers on the DAL has already been reached. (**E**) will hear the ring tone until either (**A**), (**B**), (**C**), or (**D**) is disconnected by the operator.

## 4.4  Display and Control Center (DCC)

A Display and Control Center (DCC) is a display location which can respond to events occurring at other participating locations. While there may be multiple Display and Control Centers on a network, an individual location can only accept the commands of one DCC at a time. The user's actions at any participating station, panel, or remote display determine which location will be the DCC.

VeriFire Tools programming determines whether a JDVC has or does not have DCC capabilities. The JDVC does not have a display or indicator showing it has DCC control, and so it must be mapped in VeriFire Tools to a JNCA-2 or  IFW.  When the ALL CALL, PAGE ACTIVE ALERT AREAS, PAGE ACTIVE EVAC AREAS, PAGE INACTIVE AREAS, or ENABLE TELEPHONE PAGE button is pressed at a DCC-designated JDVC, the JDVC will attempt to get control of the network for its associated JNCA-2 or IFW. The "Controls Active" LED on the panel will light when control has been granted, and paging can proceed.

## 4.5  Trouble Messages

JDVC troubles will generate a trouble message to the panel or network annunciator through the NUP port. The NUP sends the specific trouble message generated by the JDVC, and that message appears on the panel or network annunciator's screen as a JDVC trouble.

**NOTE:**  An IFC2-3030 or IFC2-640 will display specific JDVC troubles when connected directly to a JDVC and not to Noti-Fire-Net.

When a JDVC is a node on Noti-Fire-Net, specific JDVC troubles will display at the network annunciator (JNCA-2)

Table 4.1 lists and describes the system troubles that can be generated by the JDVC. These system troubles will be displayed at the network annunciator, or at an IFC2-3030 if it is a single panel connected to a JDVC.

| Trouble | Description | To Resolve |
|---|---|---|
| EXTERNAL RAM ERROR | The external RAM test failed on the JDVC. | Call Technical Services. |
| PROGRAM CORRUPTED | The database that houses the JDVC programming is corrupt. | The database must be re-downloaded, or all programming must be cleared and re-entered. If the trouble still does not clear, call Technical Services. |
| FLASH IMAGE ERROR | The JDVC software is corrupt. | Re-download the panel code software from VeriFire Tools. If the trouble still does not clear, call Technical Services. |
| NETWORK FAIL PORT x | Communication lost between Noti-Fire-Net Port x and corresponding node. | Investigate the cause and restore communication. |
| LOADING...NO SERVICE | A program or database download is in progress. The JDVC is NOT providing fire protection communication during the download. | Proper authorities should be notified while a download is in progress so that other means of fire protection can be supplied, if necessary. |
| NVRAM BATT TROUBLE | Battery backup and/or clock backup is low. | Replace the battery. Refer to "Replacement of NVRAM Memory-Backup Battery" on page 37. |
| BUZZER OFF-LINE | The piezo is disabled. | Re-enable the piezo at switch 5. |
| NCM COMM LOSS | Communication lost between NCM and JDVC | Investigate cause and restore communication. |
| SELF TEST FAILED | Diagnostic test failed. | Call Technical Services. |
| SOFTWARE MISMATCH | One or more DAAs has a software revision that does not match other DAA software revisions. | Update DAA software to match. |
| GROUND FAULT PORT x | A ground fault has occurred on DAP x (A or B). | Locate the ground fault and repair. |

**Table 4.1  JDVC System Troubles (1 of 2)**

| Trouble | Description | To Resolve |
|---|---|---|
| AUXIN TROUBLE | This trouble will be generated when the auxiliary input is supervised (as determined in VeriFire Tools programming) and no signal is detected on the input. | Check the wiring and source. |
| FFT TROUBLE | There is a short or open on the FFT riser. | Check that the 4-wire switch is correctly set, and that there is an end-of-line resistor in place for 2-wire operation. |
| DAP PORT x FAILURE | Digital Audio Port x (A or B) (wire or fiber) is not communicating due to a break in the connection, a short, or faulty hardware. | Locate and fix the break or short. If the problem is not a short or break, call Technical Services. |
| DAA NO ANSWER | ADAA is not responding. | The address of the DAA that is not responding will display at the panel or network annunciator. Investigate and fix. |
| REMOTE MIC TROUBLE | The remote microphone is in trouble. It is installed and supervised, but no signal is coming from it. | Investigate and fix. |
| LOCAL MIC TROUBLE | The local microphone is in trouble. There is no communication, or paging has been enabled for over 28 seconds and no signal has been received. | Investigate whether the mic is plugged into the JDVC, or whether there is a problem with the local mic. |
| LOCAL PHONE TROUBLE | The local FFT handset is in trouble. There is no communication, or paging has been enabled for over 28 seconds and no signal has been received. | Investigate whether the handset is plugged into the JDVC, or whether there is a problem with the handset. |
| ANALOG OUTPUT x TROUBLE | A trouble has occurred on DVC-AO analog output x (1-4). The analog output is configured for Style 7, but no audio signal is returned. | Investigate and fix. |
| DATABASE CORRUPT | The database that houses the JDVC programming is corrupt. | The database must be re-downloaded, or all programming must be cleared and re-entered. If the trouble still does not clear, call Technical Services. |
| AUDIO LIBRARY CORRUPT | The audio library is corrupt. | The library must be re-downloaded, or all programming must be cleared and re-entered. If the trouble still does not clear, call Technical Services. |
| DATABASE INCOMPATIBLE | The programming database version is not compatible with application version. | The correct application or version must be downloaded. |
| AUDIO LIBRARY INCOMPATIBLE | The Audio libratry is not compatible witht eh programming database. | The correct application or version must be downloaded. |
| DAA DOWNLOADING | The JDVC is currently downloading to DAAs. | N/A |

**Table 4.1  JDVC System Troubles (2 of 2)**

**NOTE:**  The JDVC does not generate point troubles. It does pass DAA system and point troubles to the network. See the DAA manual for the troubles it generates.

## Non-displayed Events

The JDVC will generate messages for activations/deactivations that do not normally display at network annunciators. They can be displayed at anIFW by viewing the Background Activations screen. Refer to the IFW manual.The notation will appear as IxxxxAyySz, where xxxx equals the input number, yy equals the DAA address, and z equals the speaker circuit (1, 2, 3, or 4).

## Read Status

The IFW, JNCA-2, and IFC2-3030, as well as a computer running VeriFire Tools and connected to the NUP port of  the JDVC, will be able to read the status of a JDVC.  Refer to the appropriate panel manual or VeriFire Tools for Read Status display information.

# DAA Digital Audio Amplifiers

## Section 5: DAA Overview

## 5.1  Description

The DAA Digital Audio Amplifiers are multi-featured amplifiers with digital audio functionality. They are designed for a networked or non-networked environment with the JDVC Digital Voice Command, and also for use with an analog audio source for retrofit applications.

**NOTE:**   The term DAA is used in this manual to refer to all the model versions listed in the bullets below this note. Individual part numbers are used to distinguish features or functions that differ.

| 50 Watt Digital Audio Amplifiers | | |
|---|---|---|
| DAA-5025 (120 VAC) | $25_{RMS}$ | Wire |
| DAA-5025E (240 VAC) | $25_{RMS}$ | Wire |
| DAA-5070 (120 VAC) | $70_{RMS}$ | Wire |
| DAA-5070E (240 VAC) | $70_{RMS}$ | Wire |
| DAA-5025F (120 VAC) | $25_{RMS}$ | Multi-mode fiber |
| DAA-5025EF (240 VAC) | $25_{RMS}$ | Multi-mode fiber |
| DAA-5070F (120 VAC) | $70_{RMS}$ | Multi-mode fiber |
| DAA-5070EF (240 VAC) | $70_{RMS}$ | Multi-mode fiber |
| DAA-5025SF (120 VAC) | $25_{RMS}$ | Single-mode fiber |
| DAA-5025ESF (240 VAC) | $25_{RMS}$ | Single-mode fiber |
| DAA-5070SF (120 VAC) | $70_{RMS}$ | Single-mode fiber |
| DAA-5070ESF (240 VAC) | $70_{RMS}$ | Single-mode fiber |
| | | |
| 75 Watt Digital Audio Amplifiers | | |
| DAA-7525 (120 VAC) | $25_{RMS}$ | Wire |
| DAA-7525E (240 VAC) | $25_{RMS}$ | Wire |
| DAA-7525F (120 VAC) | $25_{RMS}$ | Multi-mode fiber |
| DAA-7525EF (240 VAC) | $25_{RMS}$ | Multi-mode fiber |
| DAA-7525SF (120 VAC) | $25_{RMS}$ | Single-mode fiber |
| DAA-7525ESF (240 VAC) | $25_{RMS}$ | Single-mode fiber |

**Table 5.1   Digital Audio Amplifier Models**

**NOTE:**   The term JDVC is used in this manual to refer to all JDVC wire and fiber model versions. Individual part numbers are used in this manual only to distinguish features or functions that differ. Available models are described in the JDVC Series manual.

**NOTE:**   A Digital Audio Loop (DAL) must be connected with one of the following:
                - All wire connections
                - All single-mode fiber connections, or
                - All multi-mode fiber connections.
Wire and fiber, or multi-mode and single-mode, can not be mixed.

Figure 5.1 gives a simplified illustration of DAAs and their positions in the Digital Audio Loop (DAL) of a JDVC.
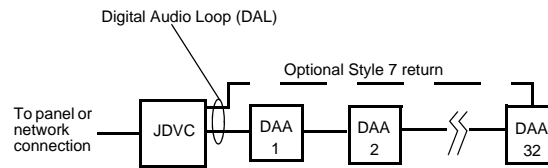


**Figure 5.1  DAL Block Diagram**

**NOTE:**
Speaker placement must be given careful consideration when planning an audio system.

• Place speakers from different DALs (Digital Audio Loops) so they are not within the audible areas of other DALs.

• Carefully consider the audible range of speakers within a DAL; overlapping audio messages can be confusing.

# 5.2  Features

The DAA audio amplifiers have the following features:

- 50W total output power at $25V_{RMS}$ (all DAA-5025 model versions) or $70\ V_{RMS}$ (all DAA-5070 model versions).

- 75W total output power at $25V_{RMS}$ (all DAA-7525 model versions).

- Two Class A (Style Z) connections for high-level audio output, or alternately, four Class B (Style Y) connections, which dynamically share the 50W output capability.

- Audio output activation via network control-by-event equations resident within the JDVC.

- Isolated alarm bus input, to be used for backup activation of alarm messages when normal digital communication is lost, or for retrofit applications.

- Amplifies one channel of digital audio and distributes it on up to four outputs (50W maximum).

- Auxiliary input for $12V_{P-P}$ analog low-level AMG-1 type audio sources.

- Auxiliary input for $1V_{RMS}$, to be used for background music input, an interface with a telephone paging source, or other compatible audio sources.  Includes user audio level adjustment feature.

- Uploads and downloads via the JDVC.

- Up to two minutes of standard quality or 15 seconds of high quality backup digital message storage (from the VeriFire Tools message library, or created by the installer) for use in the event of communication loss.

- Battery charger (50 watt DAAs only) and power supply capable of supporting up to 55AH batteries.

- Relay contacts that will activate on a trouble condition.

- Backup amplifier function.

- Programmable through VeriFire Tools.

- Meets UL requirements for 800 Hz to 2.8 KHz bandwidth.
  Meets ULC requirements for 400 Hz to 4 KHz bandwidth.

# 5.3  Specifications

## 5.3.1  DAA-PS Power Supply Board

### AC Power - TB1

115-120 VAC 60 Hz input, 4.5 A max.

220-240 VAC 50/60 Hz input, 2.3 A max. ("E" versions)

Recommended wiring: 12-14 AWG (1.6mm O.D.) with 600 VAC insulation.

### Battery Connections - TB3

Supplied cable connections to batteries for CAB-4 and CHS-BH1. For battery sharing, use 12 AWG either in the same cabinet or in conduit for no more than 20 ft (6.09 m).

### Battery Charger (50 Watt Boards Only)

Current-limited sealed lead acid battery charger which charges two 12 volt 12- 55 AH batteries in series.

Charger current: Up to 1.0 A or 5.5 A setting based on battery size programming.

Charger voltage: 27.6 VDC.

For battery calculation worksheet and standby operating times, refer to "DAA Battery Calculations" on page 105.

Utilizes wire sizes 12-18 AWG.

Battery Fuse (F2) 15A, 3AG.

## 5.3.2  DAA-5025/70 and DAA-7525 Boards

### Digital Audio Ports A and B - TB2, TB3

Refer to Table 5.2, and also to the Wiring Guide, p/n 52916ADD, for other acceptable wire types.)

| Cable Type | Maximum Distance between Ports |
|---|---|
| Belden 5320UJ (18 AWG, TP) FPL | 1900 ft (609.6 m) |
| Genesis 4050 (18 AWG, TP) FPL | 1000 ft (305.8 m) |

**Table 5.2  Recommended Digital Audio Port Cable Types**

EIA-485 format.

Power-limited.

### Single- and Multi-mode Fiber-Optic Digital Audio Ports - RXA,TXA, RXB and TXB (J100, J101, J102, and J103)

ST® Style (ST is a registered trademark of AT&T).

Supervised.

Fiber optic cable, multi-mode: 50/125 or 62.5125 micrometers.

Fiber optic cable, single-mode: 9/125 micrometers.

Attenuation of cabling between two nodes (fiber-optic circuits are point-to-point) must not exceed the Maximum attenuation, specified below.

To determine attenuation:

1.  Find the rated dB loss per foot within the cable manufacturer's specifications. Determine the total attenuation between the two nodes due to the cable.

    Loss = (loss/ft.) x (length in feet)

2.  Establish the dB loss for each connector and splice. Sum all the losses.

3. Total the attenuation factors obtained in steps 1 and 2. This will provide an approximate attenuation total. The actual attenuation can be measured end-to-end with fiber-optic industry standard equipment using a test wavelength of 850 nanometers (multi-mode)/1300 nanometers (single-mode).

The Maximum attenuation:

4.2dB for multi-mode with 50/125 micrometer cable @ 850 nm.

8dB for multi-mode with 62.5/125 micrometer cable @ 850 nm.

5.0dB for single-mode with 9/125 micrometer cable @ 1300 nm.

### Alarm Bus - TB4

Power-limited by source.

Non-supervised.

Recommended wiring: 14-18 AWG twisted-pair.

Requires 16VDC @ 20mA across the terminals to activate.

### Trouble Bus - TB5

Dry contact.

Common, non-supervised, contact rating 2A, 30VDC.

Recommended wiring: 14-18 AWG twisted-pair.

### FFT Riser - TB7

Power-limited output.

Supervised

Class A (Style Z) or Class B (Style Y) operation.

Style Y 2-wire connections require a 3.9k ohm 1/2 watt resistor (P/N R-3.9k).

Max. wiring resistance (including individual telephone zone to last handset) permitted is 50 ohms, 10,000 ft (3048 m) max. wiring distance at 14 AWG to last handset.

### Auxiliary Input A (AUX A) - TB 9

Signal strength from low-level analog audio input (such as background music or telephone paging): $1V_{p-p}$ max. Optional supervision through programming.

Recommended wiring: 14-18 AWG, twisted-pair.

Supervision programmable.

Auxiliary input source must be within 25 ft ( 7.6 m) of the DAA, and within the same room.

### Auxiliary Input B (AUX B) - TB 8

Signal strength from low-level analog audio input: $12V_{p-p}$ nominal, $15V_{p-p}$ max. Optional supervision through programming.

Recommended wiring: 14-18 AWG twisted-pair.

Supervision programmable.

### Speaker Circuits - TB10, TB11, TB12 and TB13

Power-limited outputs

DAA-5025/70 - 50 Watts dynamically shared among the four outputs

DAA-7525 - 75 Watts dynamically shared among the four outputs

Supervision determined by programming

$25V_{RMS}$ - DAA-5025/DAA-7525 speaker circuits, $70V_{RMS}$ - DAA-5070 speaker circuits

Recommended wiring: 12-18 AWG twisted -pair (shielded recommended).

Class B (Style Y) or Class A (Style Z):

Class B requires 20k end-of-line resistors (included, P/N ELR-20k).

Class A requires 10k end-of-line resistors (included, P/N R-10k) on the return.

# 5.4  DAA Board Layouts

## 5.4.1  Wire Versions

### Connection Locations

Wire DAAs are each comprised of two boards; a larger rear board, and a smaller front power supply board. Figure 5.2 below shows the layouts for these boards.



**Figure 5.2  Connection Locations for Wire Version DAA Boards**

### Indicator, Jumper and Switch Locations

Switches and LED indicator locations are illustrated in Figure 5.3.



**DAA Board**

**DAA-PS Power Supply Board**

**Figure 5.3  LED Indicator, Jumper and Switch Locations**

## 5.4.2  Fiber Versions

### Connection Locations

Fiber DAAs are each comprised of two boards; a larger rear board, and a smaller front power supply board. Figure 5.4 below shows the layout for the larger rear board. The connections for the smaller front board, the DAA-PS, are the same for all DAAs, and are illustrated in Figure 5.2, "Connection Locations for Wire Version DAA Boards".



**Figure 5.4  Connection Locations for Fiber Version DAA Boards**

### Indicator and Switch Locations

Switches and LED indicator locations are illustrated in Figure 5.5. The connections for the smaller front board, the DAA-PS, are the same for all DAAs, and are illustrated in Figure 5.3, "LED Indicator, Jumper and Switch Locations".
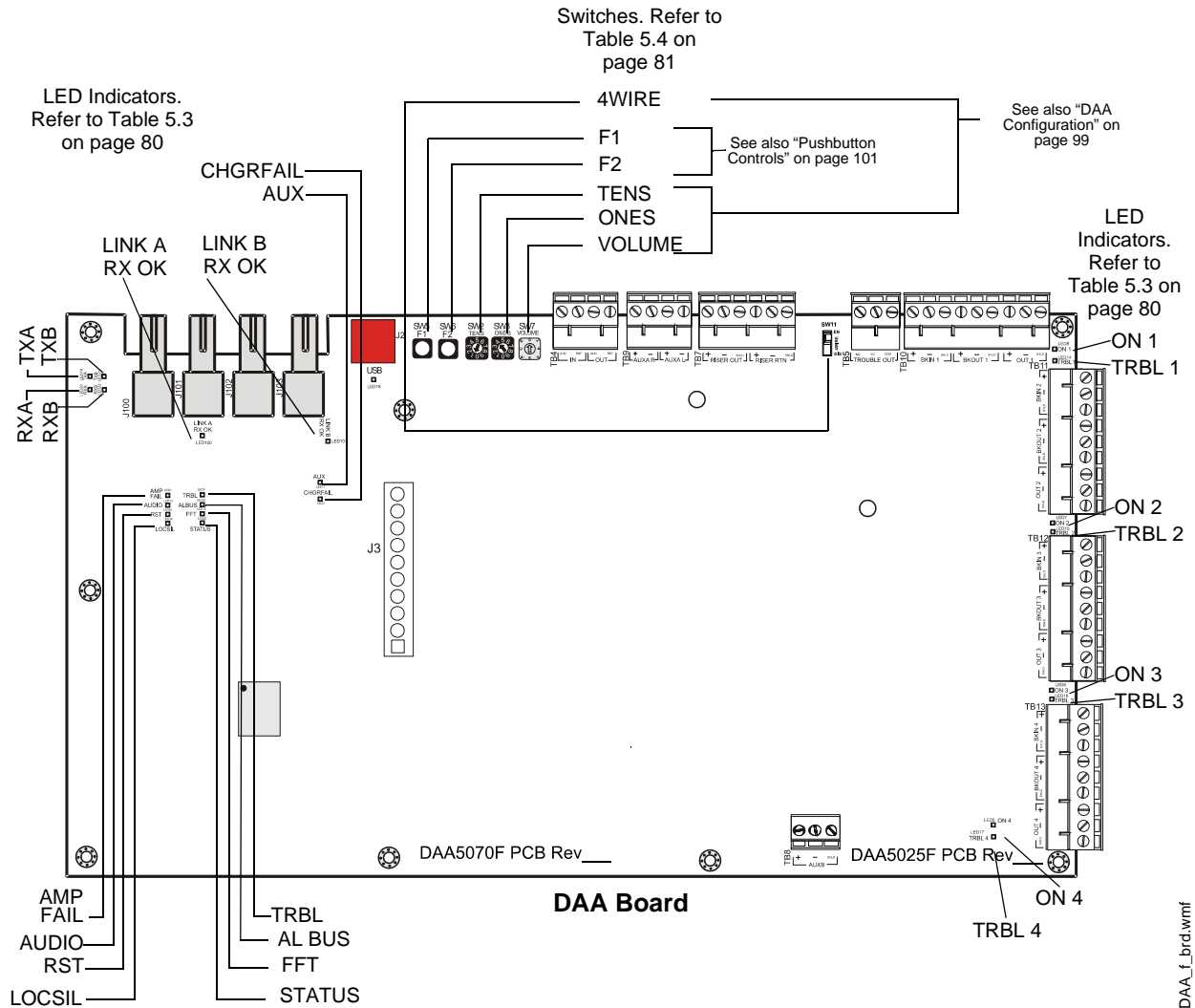


**Figure 5.5  LED Indicator and Switch Locations, Fiber Boards**

## 5.4.3  Indicators

Diagnostic colored LEDs indicate various conditions and troubles. Table 5.3 lists and describes each.

| DAA Board | | | |
|---|---|---|---|
| LED Name | Color | Description | LED # |
| EFB | Yellow | Illuminates steadily when an earth fault has been detected at digital audio port DAP B. LED is on wire versions only. | 1 |
| EFA | Yellow | Illuminates steadily when an earth fault has been detected at digital audio port DAP A. LED is on wire versions only. | 2 |
| AMP FAIL | Yellow | Illuminates steadily while audio amplifier failure detected. | 4 |
| ON 4 | Green | Illuminates steadily while analog signal is on speaker circuit 4.  Blinking while 200Hz tone is on speaker circuit 4. | 5 |

| DAA Board | | | |
|-----------|---|-------------|-------|
| **LED Name** | **Color** | **Description** | **LED #** |
| ON 3 | Green | Illuminates steadily while analog signal is on speaker circuit 3.  Blinking while 200Hz tone is on speaker circuit 3. | 6 |
| ON 2 | Green | Illuminates steadily while analog signal is on speaker circuit 2.  Blinking while 200Hz tone is on speaker circuit 2. | 7 |
| ON 1 | Green | Illuminates steadily while analog signal is on speaker circuit 1.  Blinking while 200Hz tone is on speaker circuit 1. | 8 |
| TRBL | Yellow | Blinks when there is an unacknowledged trouble, illuminates steadily when a trouble is acknowledged but unresolved. | 9 |
| AL BUS | Red | Illuminates steadily while alarm bus input is active. | 10 |
| AUX | Green | Illuminates while audio detected on either AUX IN A or AUX IN B. | 11 |
| FFT | Green | Illuminates steadily while audio is detected on firefighter's telephone riser. | 12 |
| AUDIO | Green | OFF - No audio signal is present.<br>Fast blink - The DAA is receiving audio from the JDVC.<br>Slow blink - The DAA is playing audio from stored backup tones.<br>Steady - The DAA is playing audio from its AUX input. | 13 |
| TRBL 1 | Yellow | Illuminates steadily while a short is detected on speaker circuit 1. Blinks while an open is detected. | 14 |
| TRBL 2 | Yellow | Illuminates steadily while a short is detected on speaker circuit 2. Blinks while an open is detected. | 15 |
| TRBL 3 | Yellow | Illuminates steadily while a short is detected on speaker circuit 3. Blinks while an open is detected. | 16 |
| TRBL 4 | Yellow | Illuminates steadily while a short is detected on speaker circuit 4. Blinks while an open is detected. | 17 |
| USB | Green | Illuminated while communication is established on the USB port. | 18 |
| DAP A TX | Green | Illuminates while data transmitted on Digital Audio Port A (wire or fiber).  Illumination will flicker, turning on when activity is detected and off when it is not. | 19 |
| DAP A RX | Green | Illuminates while data received on Digital Audio Port A (wire or fiber).  Illumination will flicker, turning on when activity is detected and off when it is not. | 20 |
| DAP B TX | Green | Illuminates while data transmitted on Digital Audio Port B (wire or fiber).  Illumination will flicker, turning on when activity is detected and off when it is not. | 21 |
| DAP B RX | Green | Illuminates while data received on Digital Audio Port B (wire or fiber). Illumination will flicker, turning on when activity is detected and off when it is not. | 22 |
| RST | Yellow | Illuminates when the board is not operational and maintenance is required. Call the factory. | 23 |
| LOCSIL | Yellow | Illuminates when the Local Silence (F1) button is pressed to silence speaker outputs 1 through 4. | 24 |
| STATUS | Green | Factory use only. | 25 |
| RXA OK | Green | Illuminates steadily when there is a successful single- or multi-mode fiber connection on the RXA connector. LED is on fiber versions only. | 100 |
| RXB OK | Green | Illuminates steadily when there is a successful single- or multi-mode fiber connection on the RXB connector. LED is on fiber versions only. | 101 |

| DAA-PS Power Supply Board | | | |
|---------------------------|---|-------------|-------|
| **LED Name** | **Color** | **Description** | **LED #** |
| +5V | Green | Iluminated while 5V is present. | 1 |
| E FAULT | Yellow | Illuminated while Earth fault is detected anywhere on the DAA except DAPs or AUX IN (A or B). | 2 |
| TRBL | Yellow | Software-controlled as follows:<br>  – OFF when the following system troubles are not present.<br>  – 1 blink - BROWNOUT.   Priority 1, highest priority.<br>  – 2 blinks - HIGH BATTERY.  Priority 2.<br>  – 3 blinks - LOW BATTERY.  Priority 3.<br>  – 4 blinks - CHARGER TROUBLE.  Priority 4, lowest priority.<br>If multiple troubles are present, the highest priority trouble will blink until cleared, then the next priority trouble will blink until cleared, etc. | 3 |

**Table 5.3  LED Indicators**

### 5.4.4  Switches and Jumper

The  switches described in Table 5.4 are for configuring the DAA.

| DAA Board | | | |
|---|---|---|---|
| **Name** | **Switch #** | **Description** | **Default** |
| TENS | SW2 | BCD rotary address selection switch. | 0 |
| ONES | SW3 | BCD rotary address selection switch. | 0 |
| F1 | SW5 | Pushbutton to silence speaker circuits during communication loss with JDVC. | N/A |
| F2 | SW6 | Pushbutton to reset the DAA. See page 101. | N/A |
| VOL | SW7 | BCD rotary switch for local background music. | 0 (low) |
| EFA | SW9 | Enable/disable Digital Audio Port A Earth fault detection. Switch is on wire versions only. | Off (disable) |
| EFB | SW10 | Enable/disable Digital Audio Port B Earth fault. Switch is on wire versions only. | Off (disable) |
| 4 WIRE | SW11 | Changes FFT Riser indication to 2- or 4-wire, depending on whether the riser is wired Class B or Class A. | 2-wire |
| | | | |
| DAA-PS Power Supply Board | | | |
| **Name** | **Number** | **Description** | |
| Jumper | JP2 | When DAAs are sharing batteries, cut this jumper for all but one of the DAAs to disable Earth Fault detection.  *Only the DAA intended to report Earth Faults should have this jumper intact.*<br>Note that this jumper does not enable/disable Earth Fault detection on the Digital Audio Ports. That function is determined by SW9 and SW10. | N/A |

**Table 5.4  Switches and Jumper**

# Section 6: DAA Installation

## 6.1 Cabinet

The DAA arrives from the factory already installed on its chassis. An NCM-W/F can be mounted on it. (Refer to Figure 6.2). The DAA chassis mounts in a CAB-4 Series cabinet, as well as in the EQCAB Series backboxes. It is compatible with CAB-3 Series cabinets per the instructions in Section 6.1.1

Prior to installation,

- Review the installation precautions at the front of this manual.
- Installers should be familiar with the standards and codes specified in "Standards and Other Documents" on page 8.
- Ensure all wiring will comply with national and local codes.
- Review the installation instructions in this section.

---

⚠ **WARNING:**
Wear a static discharge wrist strap to prevent equipment damage.

---

Locate the cabinet backbox on a surface that is in a clean, dry, vibration-free area. The top should be located so that all operational buttons, switches, displays, etc. are easily accessible and/or viewable to the operator - ususally no more than 66 inches (1.7 m) above the floor. Allow sufficient clearance around the cabinet for the door to swing freely, and for easy installation and maintenance of equipment.

Follow the instructions below.

1. Mark and pre-drill two holes for the keyhole mounting bolts. Install bolts.
2. Select and punch open the appropriate cabinet knock-outs. (For selection guidelines, see "UL Power-limited Wiring Requirements" on page 97.)
3. Using the keyholes, mount the backbox on the two bolts.
4. Mark the location of the two lower holes, remove backbox and drill the mounting holes.
5. Mount the backbox over the top two screws, then install the remaining fasteners. Tighten all fasteners securely.
6. Feed wires through appropriate knockouts.
7. Install DAA according to the following instructions before installing the door per the CAB-4 Series Cabinet Installation Document.

The DAA fills one row of any CAB-4 series cabinet.

## 6.1.1  CAB-3 Cabinets

**NOTE:**   The DAA is compatible with the CAB-3 Series backboxes. However, when installing the DAA in a CAB-3 Series or gray CAB-4 Series backboxes, the stud indicated in Figure 6.1 must be shortened to allow room for the TB12 connector.

Stud height must not exceed .  Gray versions of the CAB-4 Series backboxes and all CAB-3 Series backboxes have studs that require shortening.

**WARNING:**
• Do not cut without nut in place to protect threading.
• Remove all electronics from the backbox prior to cutting to avoid damage to electronics.
• Wear protective eye covering.

Procedure:
1.  Prior to DAA installation, apply nut to mounting stud to protect threading.
2.  Cut stud to proper length.
3.  Loosen nut slightly to allow DAA chassis installation, then tighten nut securely.

Cut stud with metal-cutting tool.

DAA row in backbox

Verify stud height and cut if stud exceeds 0.375 in. (9.525 mm). See note and warning above.
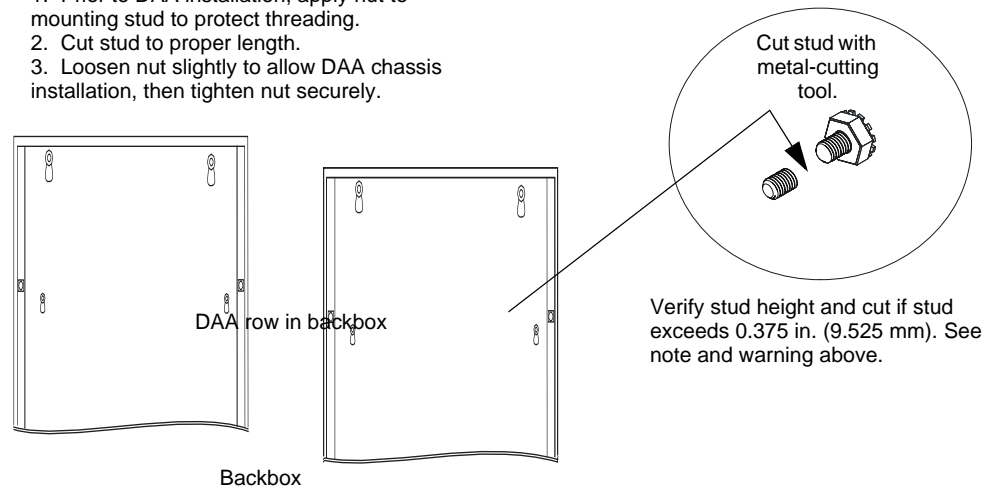
Backbox

DAACABretro.eps
DAA_CAB3studct.wmf

**Figure 6.1   Using Older Backboxes**

## 6.1.2 CAB-4 Series

Figure 6.2 illustrates a typical DAA installation. A DP-1B dress panel, ordered separately, can be used to cover the row.

1. If necessary, cut right backbox stud as indicated in Figure 6.1.

2. Remove the TB12 connector from the DAA to allow access to the chassis standoffs.

3. Place the DAA chassis over the chassis standoffs at the locations indicated. Secure with two 10/32 nuts.

4. Replace the TB12 connector for wiring.

Optional NCM-W/F Mounting:
An NCM module may be installed on the DAA.
1. Fasten two 2 3/4" aluminum 4-40 male/female standoffs ( P/N 42163, included with the DAA) at the bottom of the chassis.
2. Position the NCM over the 4 fastening points and secure with four 4-40 screws ( P/N 38134, included with the NCM).

TB12 connector

Using the hardware that comes with the DP-1B dress panel, attach it at the points indicated.

DP-1B

DP-1B.wmf
DAAmtgCAB4a.eps
DAAcnctrremovd.wmf

**Figure 6.2  DAA Cabinet Installation**

A second DAA can be installed in the C- and D- size cabinets, but a row must be skipped between them.

**NOTE:** Fiber versions of the DAA must be installed in the top row of a CAB-4 Series cabinet, or below an empty row, to allow installation of the fiber cable.

## 6.1.3 EQCAB Series Cabinets

The EQCAB cabinets come in CAB-4 B, C, and D sizes. The row spacing is different, allowing DAA amplifiers as well as power supplies to be mounted in any row, and the doors are equipped with ventilated panels for heat dissipation. The cabinets were designed so that all DAA boards manufactured after the DAAPCA (e.g., the DAAPCB) can be used in any or all cabinet rows. DAAPCA boards may be mounted in these cabinets if a row is skipped between each one. Refer to Figures 1.2, 1.4, 5.2, and 5.4 for how to determine board type. Batteries other than the 12 AH batteries in the DAA chassis must be accommodated in separate cabinets or battery backboxes.

The following models are available:

- EQCAB-D4 - Accommodates four DAAs. Consists of P/Ns EQBB-D4/R (backbox,black or red) and EQDR-D4/R (door with ventilated panels, black or red).

- EQCAB-C4 - Accommodates three DAAs. Consists of P/Ns EQBB-C4/R (backbox, black or red) and EQDR-C4/R (door with ventilated panels, black or red).
- EQCAB-B4 - Accommodates two DAAs. Consists of P/Ns EQBB-B4/R (backbox, black or red) and EQDR-B4/R (door with ventilated panels, black or red).
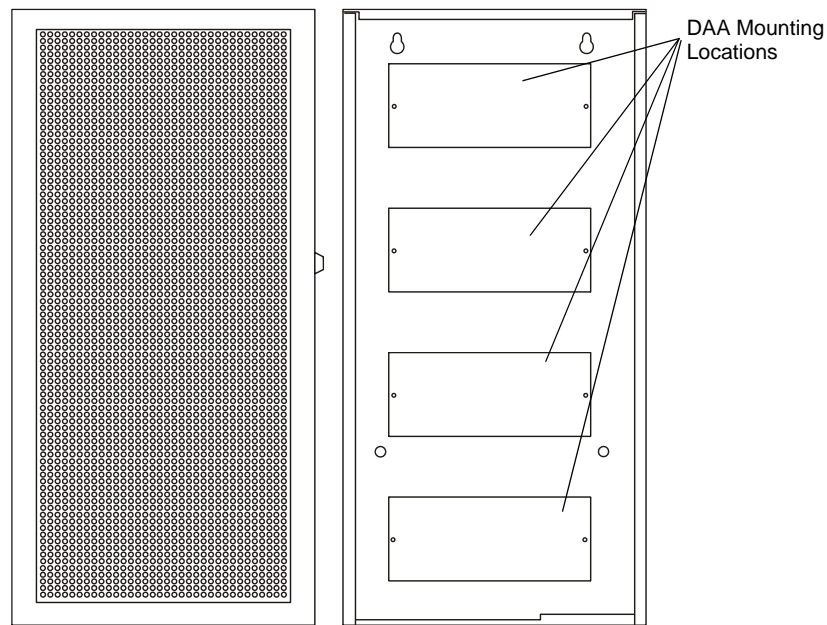


**Figure 6.3 EQCAB-D4 Cabinet**

# 6.2 Batteries

**WARNING:** Batteries contain sulfuric acid which can cause severe burns to the skin and eyes, and can destroy fabrics. If contact is made with sulfuric acid, immediately flush skin or eyes with water for 15 minutes and seek immediate medical attention.

The DAA works with two 12AH minimum to 55 AH maximum batteries. See "DAA Battery Calculations" on page 105 for current draw calculations to determine the battery size required for this installation.

Batteries for the DAA may be installed in any of the following configurations:

- In a CHS-BH1 battery chassis (12AH batteries only), designed for use with the DAA chassis.
- In the bottom of a CAB-4 series cabinet that holds the DAA.
- In a cabinet adjacent to the cabinet that holds a DAA, with connections in conduit.

## 6.2.1 In a CHS-BH1 Battery Chassis

This chassis will hold two 12AH batteries, and will mount on the left side of the DAA chassis, so that the DAA and batteries are contained in a single cabinet row.

**To mount the CHS-BH1 onto the DAA chassis:** Place battery holder against DAA chassis, resting on support as shown in Figure 6.4. Align chassis standoffs with holes. Fasten with the two 8/32" hex nuts supplied.

Place the batteries on their sides in their trays before wiring. Refer to "Connecting the DAA Power Supply to the Batteries" on page 87 for wiring instructions.

Place battery holder against DAA chassis, resting
on support. Align chassis standoffs with holes.
Fasten with the two washers (P/N 43123) and 8-32
KEPS hex nuts (P/N 36047) supplied.
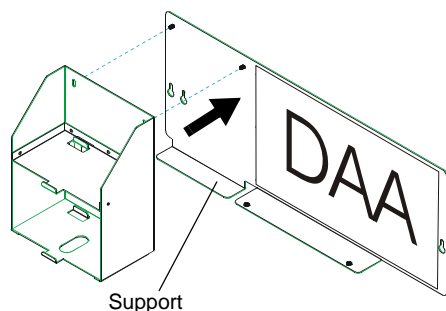
Place batteries in the trays.

Support

CHS-BHwbatts.wmf
CHS-BHtoDAAchassis.wmf
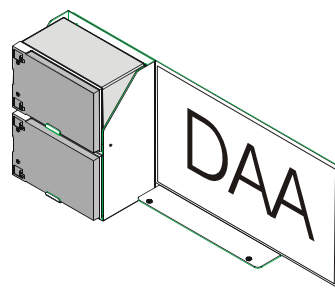
**Figure 6.4  Mounting the CHS-BH1**

## 6.2.2  Within the CAB-4 Enclosure

Place the batteries in the bottom of the cabinet, as shown
in Figure 6.5. Refer to "Connecting the DAA Power
Supply to the Batteries" on page 87 for wiring
instructions.

DAA in top row of
CAB-4D

Batteries for
DAA
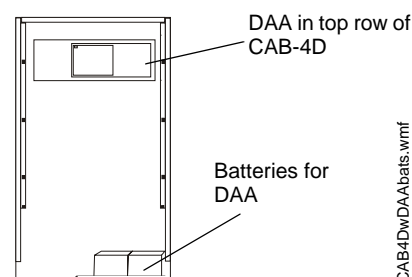
CAB4DwDAAbats.wmf

**Figure 6.5  Battery Installation
Within the Cabinet**

## 6.2.3  Outside the DAA Enclosure

Batteries may be installed outside the DAA enclosure. The battery cables must be in conduit
between the enclosures for the batteries and the DAA. Refer to "Connecting the DAA Power
Supply to the Batteries" on page 87 for wiring instructions.

# 6.3  Wiring

## 6.3.1  Connecting the DAA Power Supply to AC Power

⚠ **WARNING:** High Voltages Present.

Use extreme caution when working with the DAA. High voltage and AC line-connected circuits are
present. Turn off and remove all power sources. To reduce the risk of electric shock, make sure to
properly ground the DAA.

Close the hinged cover for TB1 after wiring but before energizing.

The DAA power supply requires connection to a separate dedicated AC branch circuit.  Follow
these guidelines when connecting the AC branch circuit:

• Label the branch circuit "Fire Alarm".

• Connect the branch circuit to the line side of the main power feed of the protected premises.

- Do not power other equipment from the fire alarm branch circuit.
- Run the AC branch circuit wire continuously, without any disconnect devices, from the power source to the power supply.
- Overcurrent protection for the AC branch circuit must comply with Article 760 of the National Electrical Codes, as well as local codes.
- Use 12-14 AWG (1.6mm O.D.) wire with 600 VAC insulation for the AC branch circuit.

**Connect primary power as follows:**

1. Turn off the circuit breaker at the main power distribution panel.
2. Open the hinged plastic insulating cover from TB1.
3. Connect the earth ground terminal (TB1 EARTH) to a solid earth ground (a metallic, cold water pipe may be suitable in some installations). This connection is vital to maintaining the power supply's immunity to unwanted transients generated by lightning and electrostatic discharge.
4. Connect the primary power neutral line to the terminal marked NEUTRAL and the primary power AC line to the terminal marked HOT.
5. Close the hinged plastic insulating cover over TB1.

**TB1**



**Figure 6.6  AC Power Connection**

Close the hinged cover over TB1 after AC power has been wired but not energized.
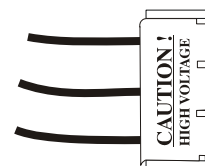


**Figure 6.7  TB1 with Closed Cover**

> ⚠ **WARNING:** Close the hinged plastic insulating cover for TB1 after wiring but before energizing. Refer to Figure 6.7.

## 6.3.2  Connecting the DAA Power Supply to the Batteries

> ⚠ **WARNING:** Do not connect the battery interconnect cable (See Figure 6.8) at this time. Leave the battery interconnect cable disconnected until after initial system power-up.

The DAA works with two 12AH minimum to 55 AH maximum batteries.  See "DAA Battery Calculations" on page 105 for current draw calculations to determine the battery size required for this installation.

DAAs can share batteries as follows:

- 26 AH batteries can accommodate one or two DAAs.
- 55 AH batteries can accommodate up to four DAAs.

Battery cables (90", 2.28 m) are included with the DAA for battery installation in any CAB-4 series cabinet that includes a DAA in one of the rows. Shorter battery cables (18", 0.5 m) are included with the CHS-BH1. For battery sharing, use 12 AWG wire either in the same cabinet, or in conduit for no more than 20 ft. (6.09 m.).

## Batteries Within the Same Enclosure as the DAA

Refer to Figure 6.8 for battery connections.
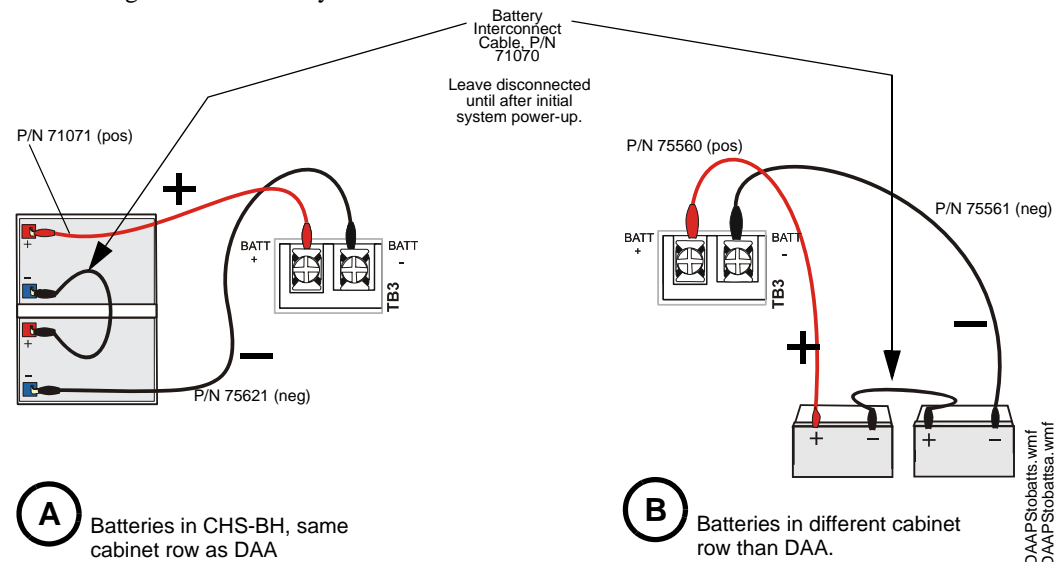


**Figure 6.8  Connecting Batteries to TB3 on the DAA-PS**

## Batteries Outside the DAA Enclosure

When the batteries are installed outside the DAA cabinet, connections are the same as in Figure 6.8. However, the battery cables between the two enclosures must be in conduit.
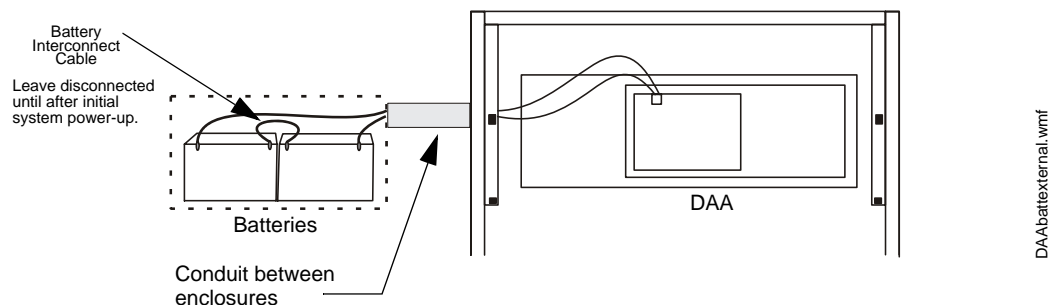


**Figure 6.9  Using Conduit**

## Battery Sharing

Up to four DAAs may share a set of batteries. When DAAs share batteries, the JP2 jumpers must be cut on all but one DAA attached to a set of batteries, to disable Earth Fault detection on all but the one with JP2 left intact. (Refer to Figure 5.3 on page 77 and Figure 5.4 on page 78.)

VeriFire programming (see "Audio Amplifiers" on page 45) must designate all DAAs but one as having the charger disabled.

**NOTE:**  This designation must be made for the 75 watt boards as well as the 50 watt boards.

Only one DAA should have its JP2 jumper intact, and only one DAA should have a working charger. These DAAs do not have to be the same.

**NOTE:**   Only one DAA should have an intact JP2 jumper, and only one DAA should have the battery charger enabled. The DAA with the intact jumper does not have to be the same DAA that has the charger enabled.

Connect all DAAs sharing a set of batteries directly to the batteries using 12 AWG. If the batteries are located outside of the DAA cabinet, the wiring must be in conduit that is no greater than 20 ft (6.09 m) long.
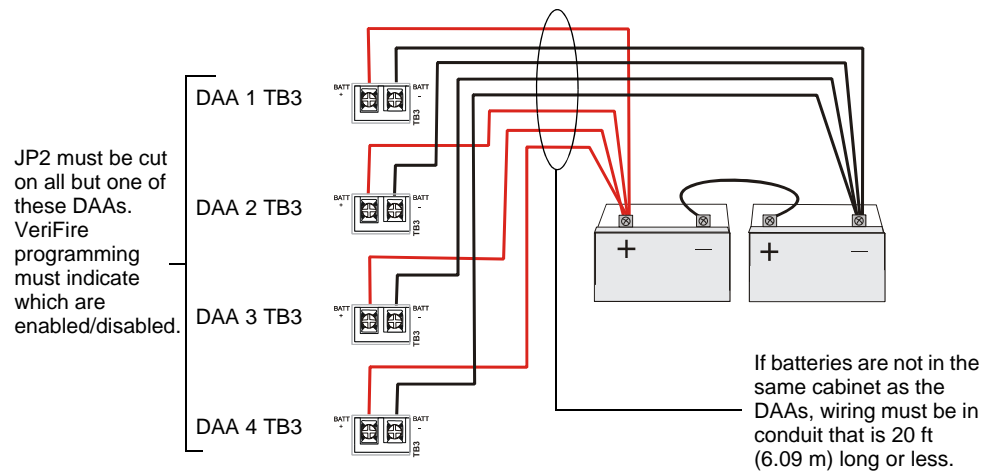


**Figure 6.10  Four DAAs Sharing 55AH Batteries**

## 6.3.3  Connecting the Alarm and Trouble Buses

### Alarm Bus

The DAA general alarm connections are used to receive general alarm messages from an FACP via the SLC, or via the Notification Appliance Circuit of an FACP or power supply.
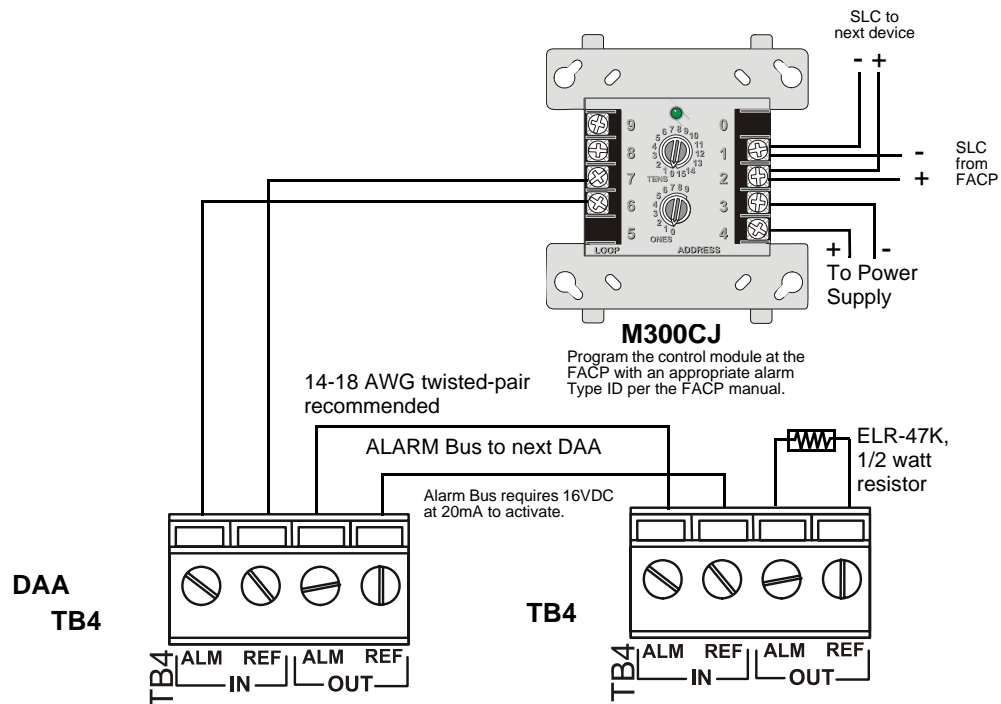


**Figure 6.11  Alarm Bus Connections to M300CJ**

**NAC Circuit**

A -

A +

B -

B +

Listed compatible panel or power supply with onboard NAC circuits.

ALARM Bus to next DAA

14-18 AWG twisted-pair recommended

ELR per panel or power supply manual.

Alarm Bus requires 16VDC at 20mA to activate.

DAA
TB4

TB4

DAABRDtb4.wmf

TB4  ALM   REF  ALM  REF
      IN          OUT

TB4  ALM   REF  ALM  REF
      IN          OUT
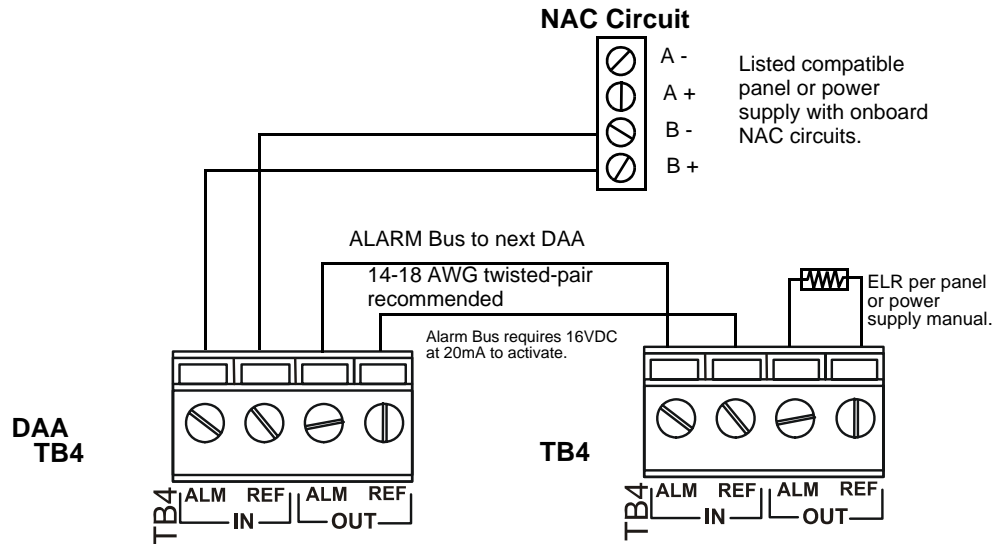
**Figure 6.12  Alarm Bus Connections to NAC**

Refer to the SLC manual and specific panel or power supply manual for more information.

### Trouble Bus

The DAA trouble bus connections are used to send general trouble messages to an FACP.  The trouble relay is used mainly as a backup in the event the monitoring panel loses communication with the JDVC over Noti-Fire-Net.  Figure 6.13 illustrates wiring the Common and Normally Open out connections to anM300MJ monitor module.

SLC to next device

-  +

-   SLC from FACP

+

**M300MJ**

Program the monitor module at the FACP with an appropriate Type ID per the FACP manual

ELR-47K, 1/2 watt resistor

14-18 AWG twisted-pair recommended

To another DAA

TB5

DAA
TB5

FMM-1.wmf
DAABRDtb5.wmf

TB5  NO   NC  COM
     TROUBLE OUT

TB5  NO   NC  COM
     TROUBLE OUT
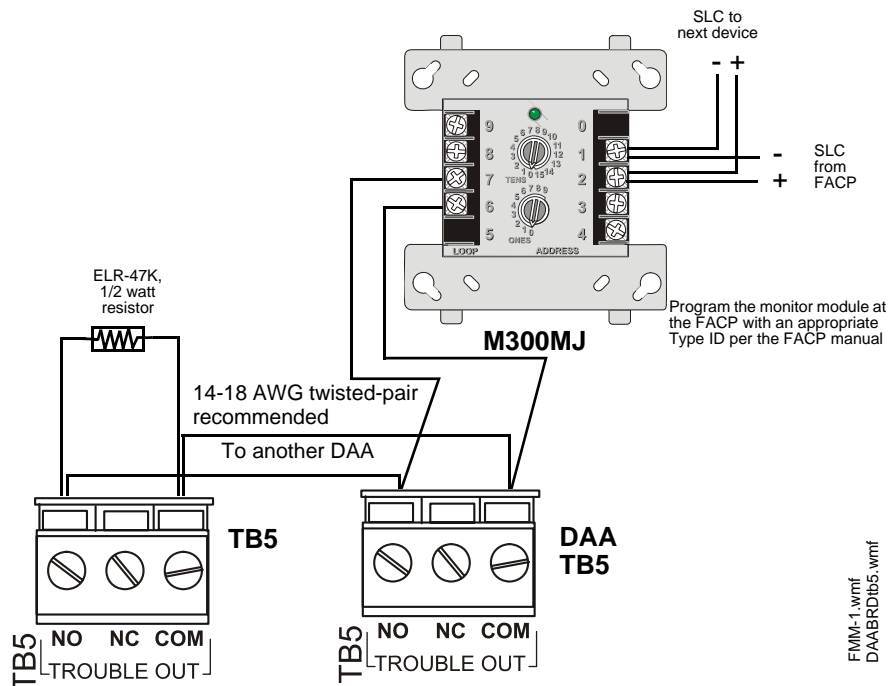
**Figure 6.13  Trouble Bus to M300MJ**

Refer to the SLC manual and specific panel manual for more information on panel and SLC wiring.

## 6.3.4  Digital Audio Ports A and B on Wire Version Boards

Digital Audio Ports A and B (DAP A and DAP B) allow digital communication with the JDVC over the Digital Audio Loop (DAL).  Amplifier programming from the JDVC; control, audio, trouble, address and firefighter's telephone data; and live voice paging can be communicated through these ports.  They may also act as repeaters, in that what is received at one port is transmitted out the other. Events generated at the DAA will be transmitted out both ports.

See "Digital Audio Ports A and B - TB2, TB3" on page 74 for cable types and associated distances between ports.
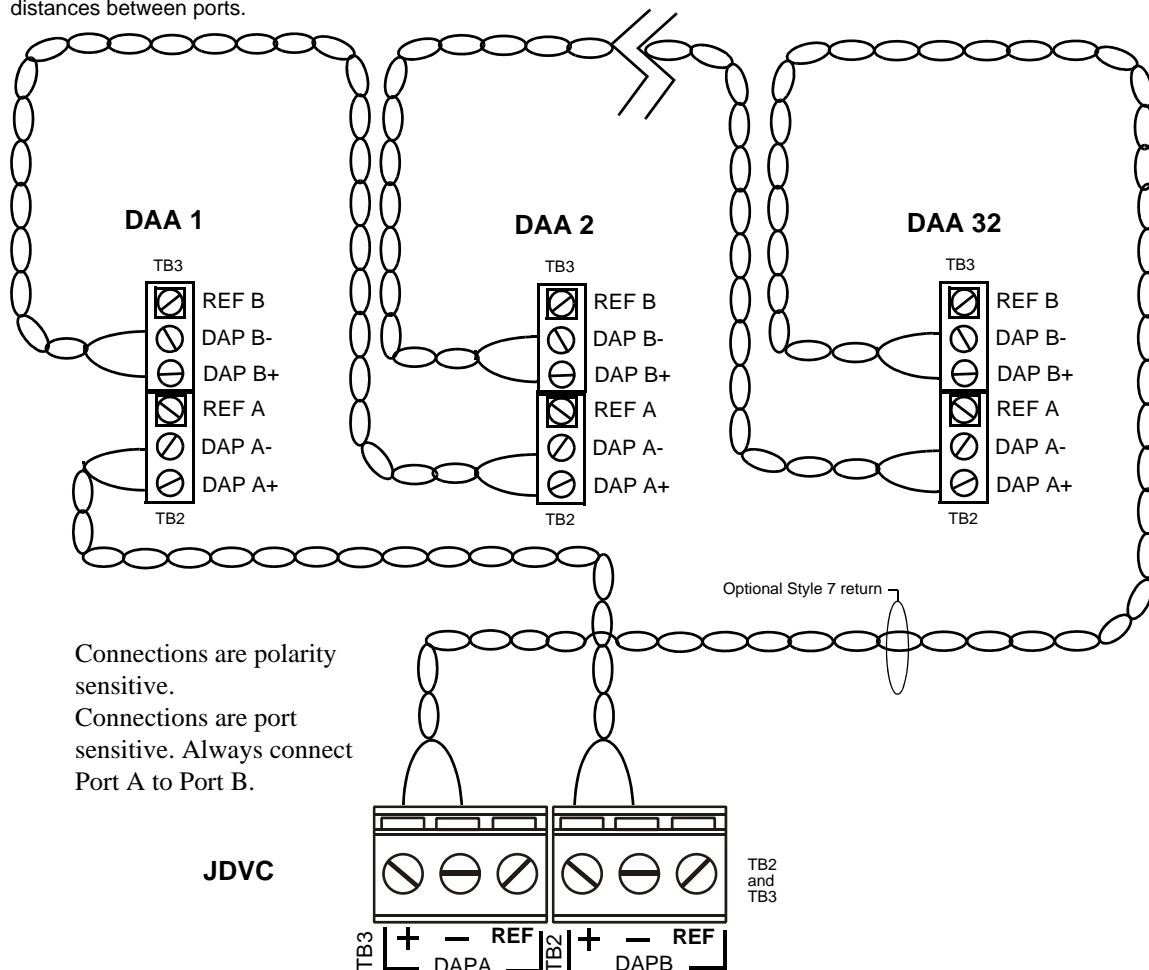
Connections are polarity sensitive.
Connections are port sensitive. Always connect Port A to Port B.

**Figure 6.14  Wire the DAA Digital Audio Loop Connections**

![](NOTE icon) **NOTE:** Digital Audio Ports A and B must be wired in Style 4 or Style 7 configuration. Do not wire them in bus configuration.

![](NOTE icon) **NOTE:** Style 4 configuration must be installed in accordance with the requirements for survivability from attack by fire in the National Fire Alarm Code, NFPA 72.

Refer to "EFA and EFB (Switches 9 and 10)" on page 99 for information on enabling earth fault detection on the wire DAL.

## 6.3.5 RXA, RXB, TXA, TXB Fiber Version Board Connections

Fiber ports RXA, RXB, TXA and TXB allow digital communication with the JDVC fiber boards. The fiber cabling between these ports provides a Digital Audio Loop (DAL) for programming; alarm, control, trouble, automatic audio messages, address and firefighter's telephone data; and live voice paging communications.

> **NOTE:** A fiber DAL must be connected with one of the following:
>          - All single-mode fiber connections, or
>          - All multi-mode fiber connections.
> Multi-mode and single-mode can not be mixed.
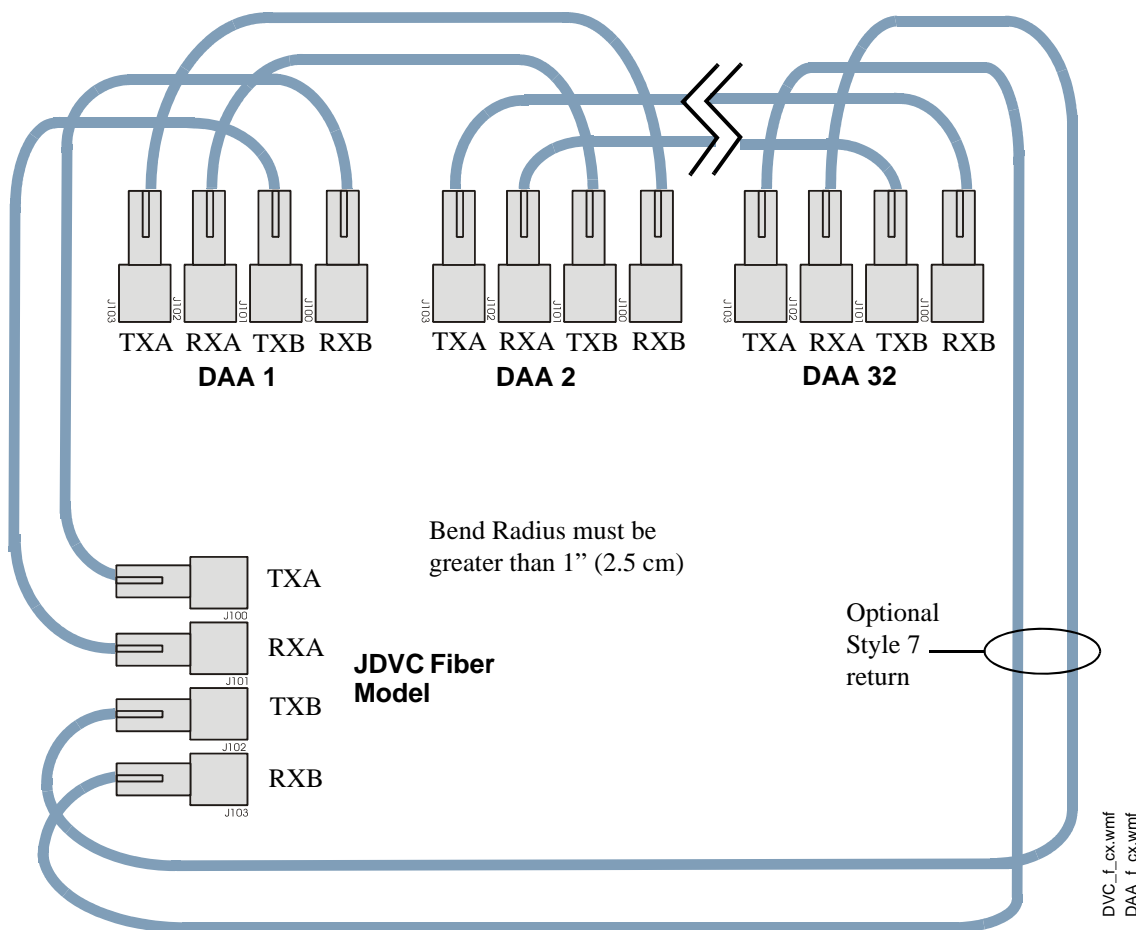
**Figure 6.15  Fiber Digital Audio Loop Connections**

> **NOTE:** Style 4 configuration must be installed in accordance with the requirements for survivability from attack by fire in the National Fire Alarm Code, NFPA 72.

## 6.3.6 FFT Riser Connections

The Firefighter's Telephone Riser connections (TB7) provide for the use of firefighter's telephones (FFTs) on an analog network. They are a means of connecting various FFT control modules and devices, such as M500FPJ modules, AFAWS, or XPIQ telephone circuits to the DAA.

The FFT riser may be wired in NFPA Class A or Class B configuration. VeriFire Tools must be used to select Class A or Class B for trouble supervision. Class B 2-Wire configurations require a 3.9K ohm 1/2 watt end-of-line resistor (P/N R-3.9k).
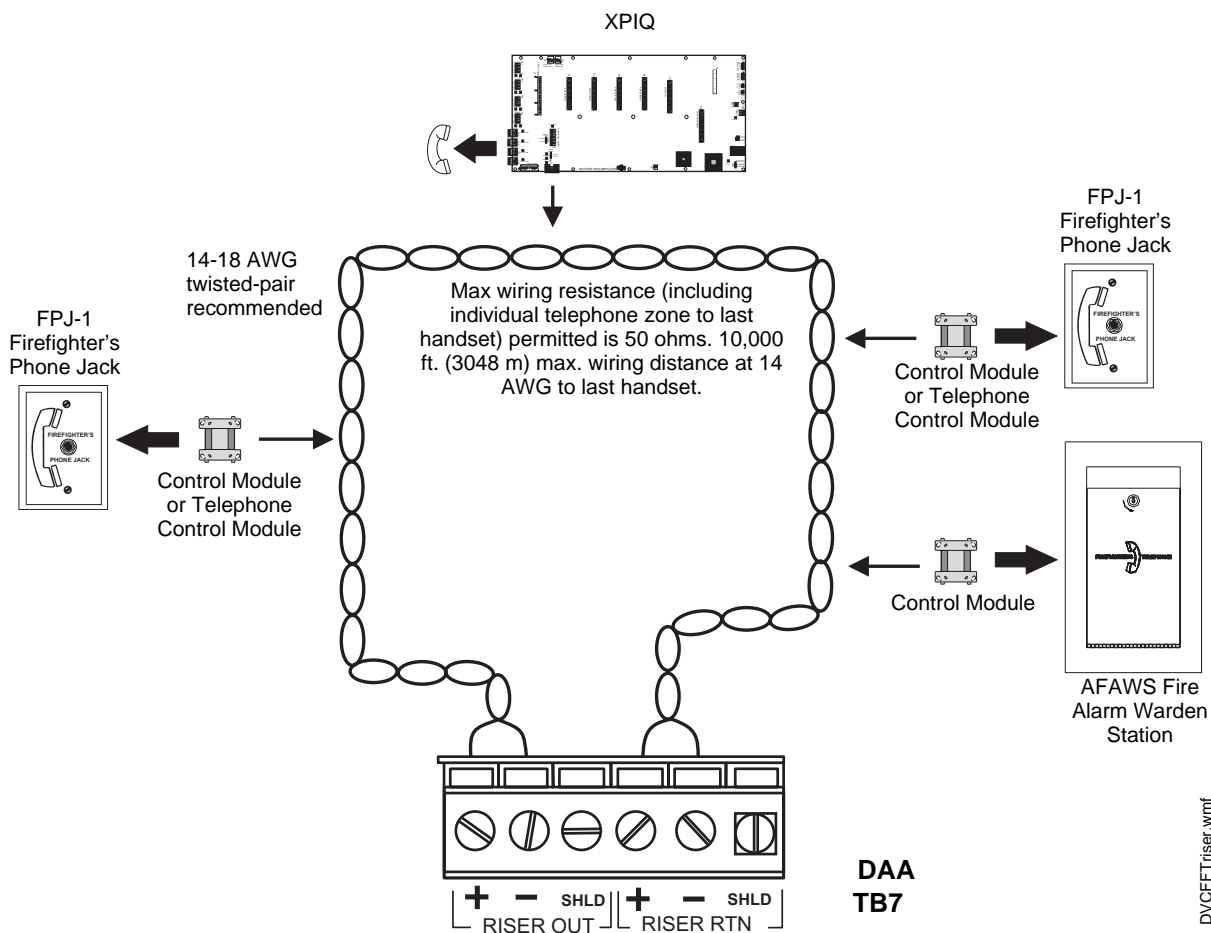


**Figure 6.16  FFT Riser (Class A Example)**

For a description of the JDVC firefighter's telephone network operation, refer to Section 8.4 on page 102.

**NOTE:**  Digital audio software Version 2.0 and above does not support FFT risers on  JDVC or DAA PCA boards. Refer to Figures 1.2, 1.4, 5.2, and 5.4 for how to determine board type. Check VeriFire or an appropriate network display to determine the software version.

## 6.3.7  Auxiliary Inputs A and B

The DAA provides two analog audio connections. One or the other may be used, not both.

### Auxiliary Input A

Auxiliary Input A (AUXA) is intended for background music, and provides a high-fidelity connection to common audio appliances such as a radio, CD player, or tape deck.  Two-channel stereo signals are changed to monophonic signals.
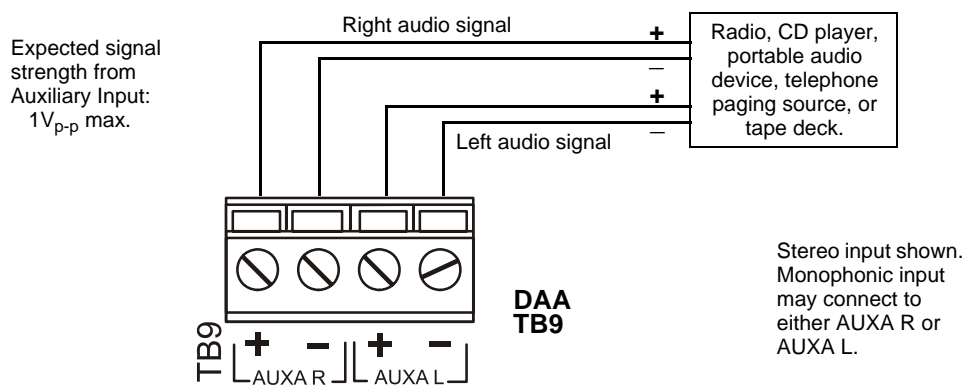


**Figure 6.17  AUX A Auxiliary Audio Input**

Background music will be silenced while batteries greater than 26AH are being fully charged.

### Auxiliary Input B

Auxiliary Input B (AUXB) is provided to accept low-level analog audio input at $12V_{p-p}$ nominal, $15V_{p-p}$ max. The messages are then transmitted out as high level audio to DAA speaker circuits as designated by programming. VeriFire Tools programming determines if signal supervision of AUXB is enabled.
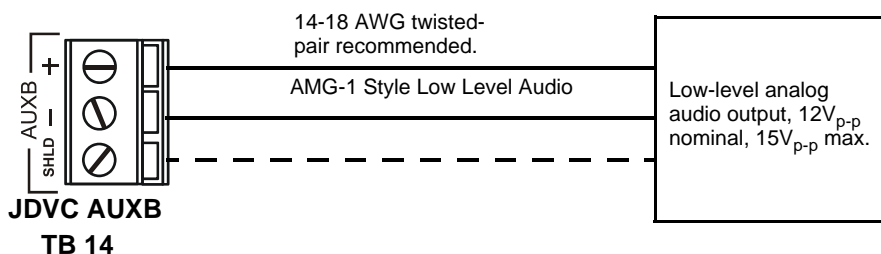


**Figure 6.18  AUXB Auxiliary Audio Input**

## 6.3.8  Speaker and Backup Circuits

Speaker circuits 1 through 4 (terminals 10 through 13) provide for two NFPA Class A (Style Z) connections for high-level audio output, four NFPA Class B (Style Y) connections, or One Class A and two Class B connections. These connections dynamically share the 50W output capability of the DAA.

A DAA may be wired using the "BKIN" and "BKOUT" terminals to back up an amplifier.  If an amplifier fails, the signal automatically switches to the backup amplifier.

Speaker and backup connections are illustrated in Figure 6.19.
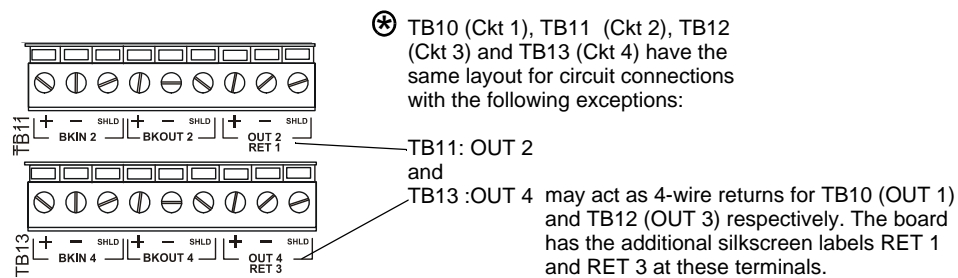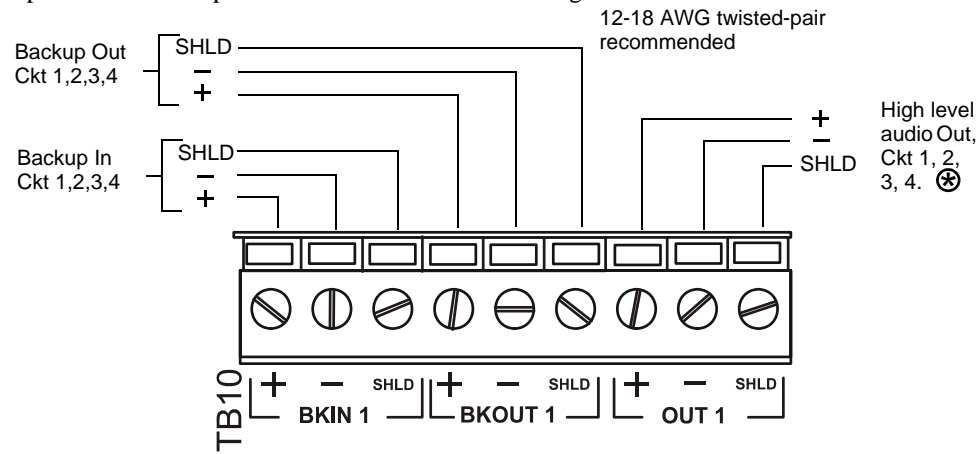


**Figure 6.19  Speaker Circuit and Backup Connections**

## Speaker Circuits

The amplified signal from the DAA may be connected directly to speakers, or to an ACT-2 Audio Coupling Transformer, for low-level signals to XPIQs or AA Series analog amplifiers. Following are illustrations of Class A and Class B configurations (Figures 6.20).
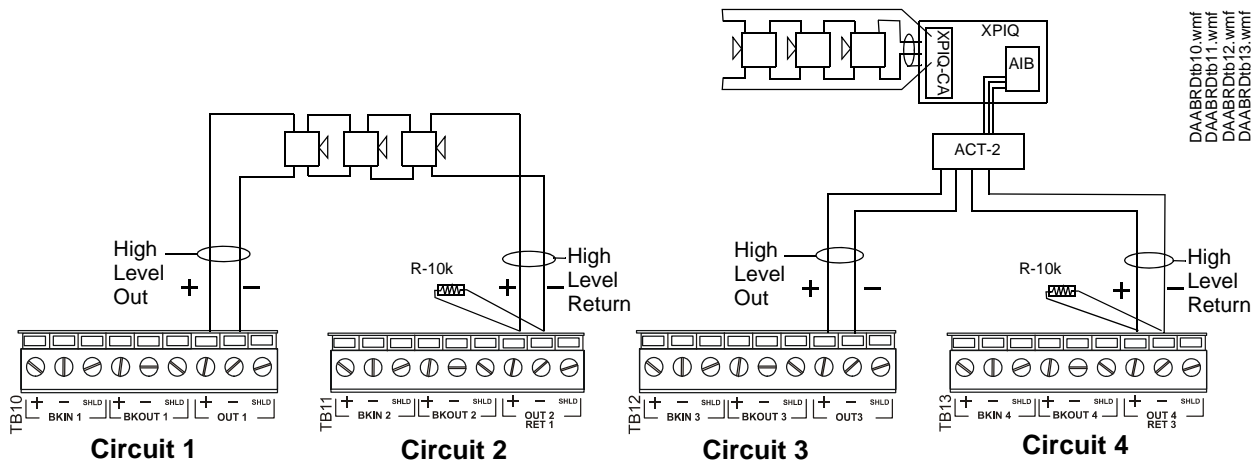


**Figure 6.20  Two DAA Class A (Style Z) Circuits**
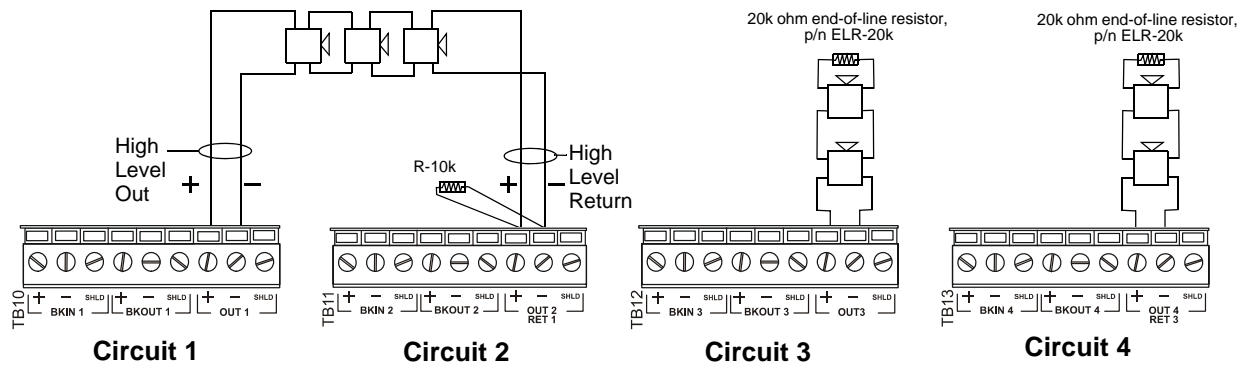
**Figure 6.21  One DAA Class A (Style Z) Circuit, Two Class B (Style Y) Circuits**

### Speaker Backup Circuits

The DAA supports one-to-one or one-to-many backup amplification. Each DAA must be designated a primary or backup amplifier through VeriFire Tools programming.

#### ■ One-to-One Backup

Figure 6.22 illustrates output sources 1, 2, 3 and 4 on the primary amplifier backed up by the backup amplifier. Should the primary amplifier fail, all its messages will still be played as programmed.



| VeriFire Tools Programming | |
|---|---|
| Primary DAA Address | 1 |
| Backup DAA Address | 2 |
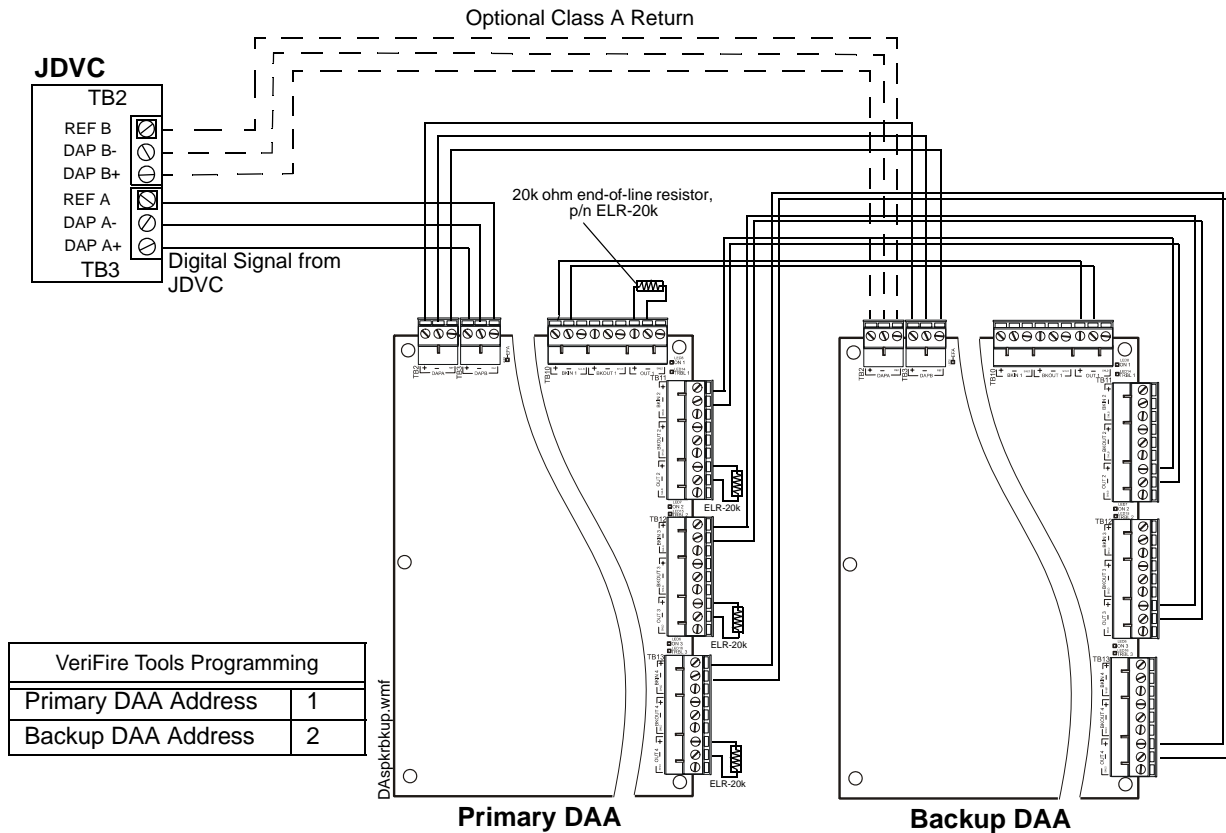
**Figure 6.22  One-to-one, All Sources Backed Up**

■ **One-to-Many Backup**

One amplifier may be used to back up as many as 31 primary DAA amplifiers. All primary amplifiers backed by the same backup amplifier must be wired in the same style; that is, all Class A (Style Z) or all Class B (Style Y).

A backup amplifier can support one failed primary amplifier at a time. Should another primary amplifier also fail, the backup amplifier may also fail, generating an AMPLIFIER LIMIT trouble until the load is reduced or reset.
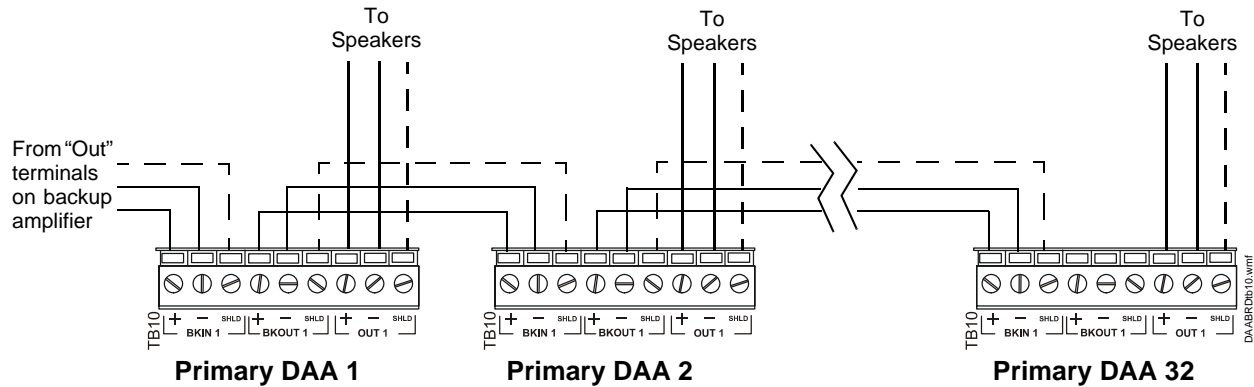


**Figure 6.23  One-to-Many Backup**

## 6.3.9  UL Power-limited Wiring Requirements

Power-limited and non-power-limited circuit wiring must remain separated in the cabinet. All power-limited circuit wiring must remain at least 0.25 inches (6.35 mm) from any non-power-limited circuit wiring. All power-limited and non-power-limited circuit wiring must enter and exit the cabinet through different knockouts and/or conduits.
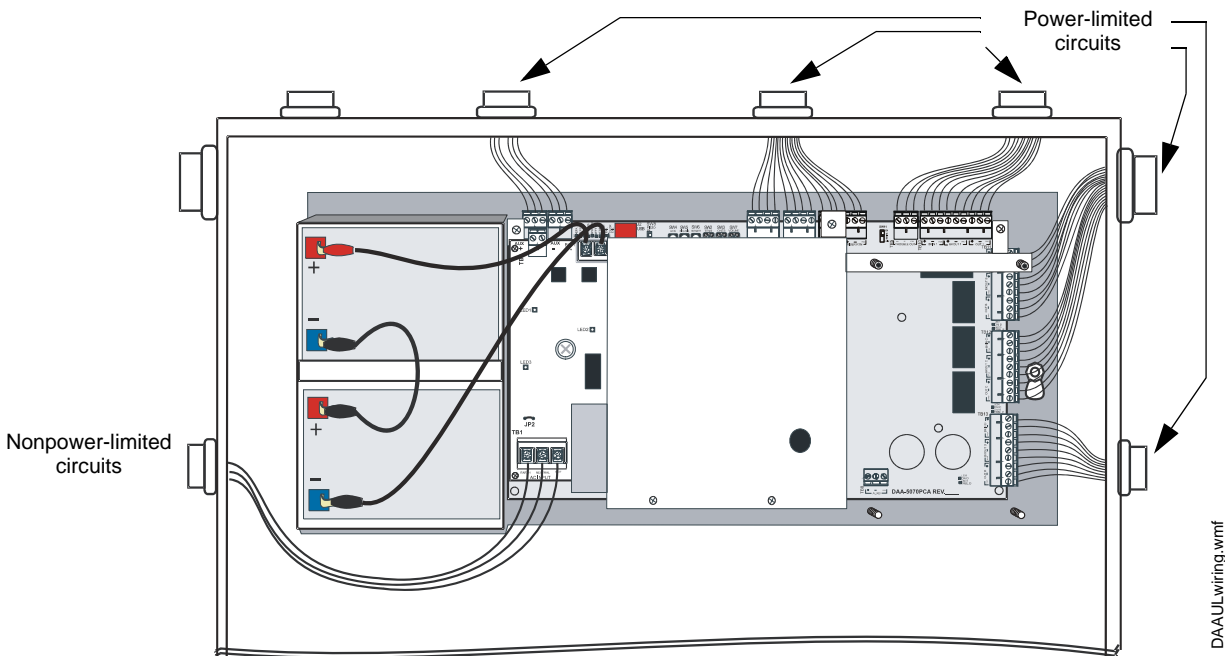


**Figure 6.24  Typical Backbox Wiring**

# 6.4 Replacement of NVRAM Memory-Backup Battery

The DAA board has a snap-in lithium battery that provides backup of the DAA's on-board memory during power loss. Refer to Figure 5.2 on page 76 or Figure 5.4 on page 78 for the location. The expected shelf-life for this battery is 10+ years. However, if battery connections are damaged or the battery does lose power, a system trouble message will be generated: "NVRAM BATT TROUBLE". A new battery (P/N 31005, SGS Thompson M4T32BR12SH1) must be purchased and installed to replace the old.

To replace the battery:

1. Power down the system.
2. Use your fingers to carefully pull the battery off the board.
3. Align the new battery and push it into the same space. The dot in one corner of the battery should align as indicated in Figure 5.2 on page 76.
4. Power up the system.

# Section 7: DAA Configuration

## 7.1  Setting the Configuration Switches

### 7.1.1  EFA and EFB (Switches 9 and 10)

The wire versions of the DAA boards have two earth fault detection switches for use with Digital Audio Ports (DAPs) A and B. The switches arrive from the factory disabled, and may require resetting if earth fault detection is desired.

Each DAP on a DAA or JDVC is electrically isolated from the other DAP and all other circuitry on the DAA or JDVC.

A DAP with its associated earth fault switch *enabled* must be connected to a DAP with its associated earth fault switch *disabled* for detection to occur.  Otherwise, either

SW9  and SW10 in DISABLE position



To enable, push the switch towards EN.

**Figure 7.1  EFA/EFB Enable/Disable**

- no detection will occur (when two connected DAPs have their associated switches disabled), or
- an earth fault will be generated (when two connected DAPs have their associated switches enabled).

Refer to Figure 7.2.

For specific DAP wiring instructions refer to Figure 6.14, "Wire the DAA Digital Audio Loop Connections" on page 91.
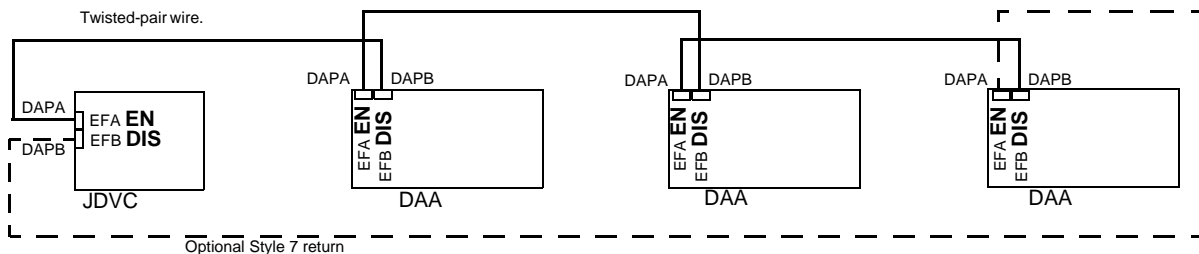


**Figure 7.2  Earth Fault Switch Settings for a Wire Digital Audio Loop (DAL)**

### 7.1.2  4WIRE (Switch 11)

The FFT riser may be wired in a Class A four-wire or a Class B two-wire configuration. For Class A installations, enable the switch. For Class B, disable the switch.

VeriFire Tools programming must be set the same as this switch.
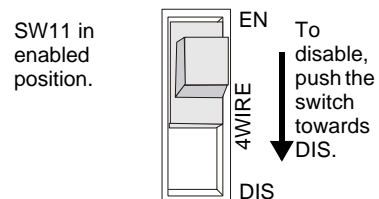


**Figure 7.3  4WIRE Enable/Disable**

### 7.1.3  Address Switches

A maximum of 32 DAAs may be connected to one JDVC.  Each DAA must have its own address so the events it generates can be distinguished from those of other DAAs, for unique routing of messages and sounds, and for speaker circuit control. Address switches SW2 (tens) and SW3



The SW2 arrow points to one (1). Tens switch set to one (1).
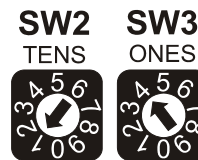
The SW3 arrow points to four (4). Ones switch set to four (4).

DAA Address set to 14

**Figure 7.4  DAA Address Switches**

(ones) are used to address the DAA. Refer to Figure 7.4 for an illustration of addess settings and to Figure 5.3 on page 77 for the location of the switches..

Addresses one (1) through 32 may be used for digital communication. Address 00 and addresses above 32 will generate a DAA trouble.

The default address setting for the DAA as it arrives from the factory is 00.

### 7.1.4  Volume Control

A rotary switch (SW7) is supplied to adjust the volume for local background music from the AUXA or AUXB input.
The default volume setting for the DAA as it arrives from the factory is 0 (Low). Turning the arrow clockwise to point at higher numbers and then letters raises the volume.
Refer to Figure 5.3 on page 77 for the location of this control.



**Figure 7.5  DAA Volume Control**

## 7.2  Programming

The DAA is programmed through VeriFire Tools. Refer to the JDVC Manual programming section as well as the VeriFire Tools CD and Help file for information on how to create, prioritize and download audio messages, create system equations for message distribution, and set system parameters.

# Section 8: DAA Operation

There are two pushbutton controls and one volume control on the DAA board. Refer to Figure 5.3 on page 77 for their location.

## 8.1 Pushbutton Controls

Table 8.1 summarizes the functions of each pushbutton control.

| Pushbutton | Function | When to use |
|---|---|---|
| F1 | Silences speaker circuits 1 through 4. This pushbutton is enabled by the DAA when there is a communication loss with the JDVC. | To turn off speaker outputs on speaker circuits 1 through 4. |
| F2 | Clears local signal silences and reinitializes the amplifier if it turned off due to overcurrent protection. | After causes of DAA trouble messages have been cleared. |

**Table 8.1  Pushbutton Controls**

## 8.2 Volume Control

The DAA provides a volume control for background music from auxiliary port A or B (See "Volume Control" on page 100). The volume of other audio messages is determined through the VeriFire Tools Read Status Service Form and FACP/network annunciator programming.

## 8.3 FFT Paging

To page using an FFT handset on the JDVC's FFT riser or the FFT riser on one of its DAAs, follow the instructions below.

### Configured with Annunciator

1. Activate the handset for FFT communication by lifting the receiver or plugging in the phone jack.
2. Press the annunciator button(s) mapped to the FFT.
   - Specific Local Paging (when there is no ENABLE PAGING button) - Press the single button for the specific area to be paged (ie. Cafeteria) to enable paging. The annunciator LED will blink.
   - Specific Network Paging - Press the ENABLE PAGING button, then press the button for the specific area to be paged (i.e., Cafeteria, East Wing). The annunciator LEDs will blink.
   - General Local and General Network Paging - Press the ENABLE PAGING button, then press the button for the type of paging desired (ALL CALL, PAGE EVAC, PAGE ALERT , PAGE INACTIVE) The annunciator LEDs will blink.
3. Press the push-to-talk button.
4. Page.
5. To end the page, release the push-to-talk button and press the *paging function* button (not the ENABLE PAGING button) to deactivate. The annunciator LED(s) will turn off.

### Configured with Keyswitch

1. Activate the handset for FFT communication by lifting the receiver or plugging in the phone jack.
2. Insert and turn the key in the keyswitch.

3. Press the push-to-talk button.

4. Page.

5. To end the page, release the push-to-talk button and turn the key back to its original position.

### Not Configured for Paging

1. May request the paging function from the JDVC operator once they have established digital FFT communication. The JDVC operator must press the ENABLE TELEPHONE PAGE button, then the paging function button.

2. Press the push-to-talk button to page.

3. When paging is complete, release the push-to-talk button. The JDVC operator must press the ALL CALL button, then the ENABLE TELEPHONE PAGE button to end the page.

# 8.4  JDVC Firefighter's Telephone Network Communication

## 8.4.1  Description

The JDVC firefighter's telephone network consists of the JDVC's own analog riser, analog risers that exist on any of the (up to) 32 DAA audio amplifiers connected to the JDVC, and the Digital Audio Loop (DAL) that connects them all at DAPA and DAPB digital audio ports.

FFT network activation (that is, when a handset on one of these risers is granted a connection by the operator) allows intercommunication between the JDVC's FFT analog riser and up to four other dynamically-changing sets of FFT risers on the DAAs at addresses 1-4. Each riser can sustain seven active FFT handsets, so 35 handsets may be active within the network at the same time. If this number is exceeded, a short circuit trouble will be generated by the JDVC; however, FFT communications will continue

**NOTE:**  The FFT riser on the JDVC is always one of the five active risers. Four FFT risers can be active on DAAs at the same time.

**NOTE:**  The JDVC's TELH-1 connection (J8) always counts as one of the seven active FFT handsets on the JDVC, whether there is a TELH-1 handset connected to it or not.

Figure 8.1 and the text that follows gives an example of how activated analog FFT risers interact with the Digital Audio Loop (DAL).
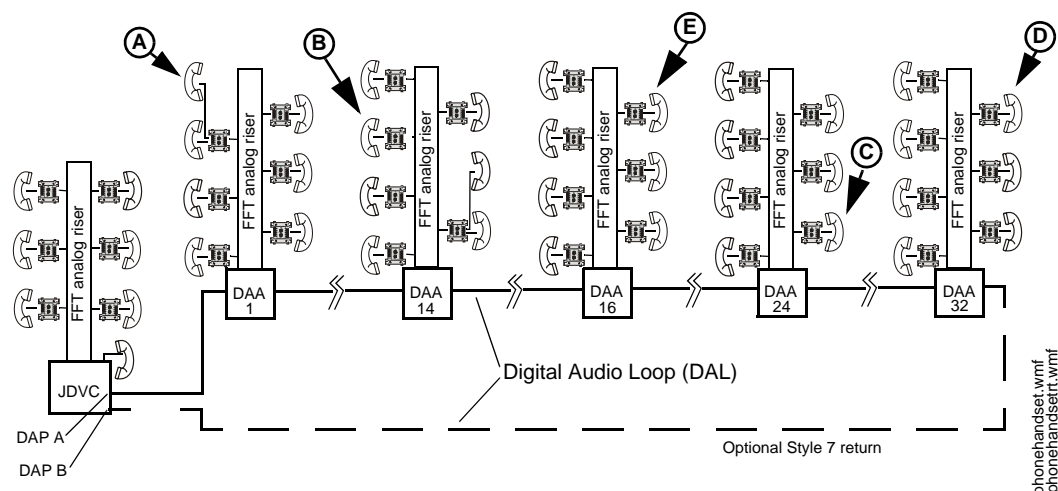


**Figure 8.1  Active JDVC Firefighter's Telephone Network**

1. A firefighter at DAA 1 activates a handset (**A**) on the analog FFT riser by lifting the receiver or plugging in a phone jack. An operator grants the firefighter a connection.

   (**A**) will automatically be granted a Digital Audio Loop (DAL) connection.

   *[ 1 (DAA 1) analog riser + 1 (JDVC) analog riser = 2 risers interconnected on the DAL.]*

2. Subsequently, firefighters at DAA 14 (**B**), DAA 24 (**C**), and DAA 32 (**D**) activate handsets and are granted connections by the operator.

   (**B**), (**C**), and (**D**) will automatically be granted DAL connections.

   *[4 (DAA 1, 14, 24 and 32) analog risers +1 (JDVC) analog riser = 5 risers - the maximum allowed - interconnected on the DAL.]*

3. A firefigher at DAA 16 activates a handset (**E**) and is granted a connection by the operator.

   (**E**) will hear a ring tone on his handset.

   (**E**) will be placed in a queue for the next available connection, because the maximum of 5 risers on the DAL has already been reached. (**E**) will hear the ring tone until either (**A**), (**B**), (**C**), or (**D**) is disconnected by the operator.

# 8.5  Trouble Messages

DAAs will send trouble messages to the panel or network annunciator through the trouble relay, or through the wire or fiber DAL (Digital Audio Loop).

The trouble relay sends a general trouble message to the panel, and the trouble must then be investigated at the DAA by checking the LED indicators. The trouble relay is used mainly as a backup in the event the monitoring panel loses communication with the JDVC over Noti-Fire-Net.

The Digital Audio Loop carries the specific trouble message generated by the DAA, and that message appears on the panel or network annunciator's screen as a DAA trouble. The specific trouble message displayed will identify the DAA that generated it by displaying the Noti-Fire-Net node number of its JDVC, then the DAAs amplifier address (1 - 32). If the trouble is a speaker circuit trouble, the address will also contain the speaker circuit (1-4). The format will be AxxSz, where xx is the DAA address, and z is the speaker circuit number.

**NOTE:**  If the JDVC is directly connected to an IFC2-3030 (that is, they are not connected through an NCM-W/F), the IFC2-3030 will display specific DAA troubles.

When the JDVC is a node on Noti-Fire-Net, specific DAA troubles will display at the network annunciator (JNCA-2).

Refer to Table 5.3 on page 80 for an explanation of the indicators.

| System Trouble | Description | To Resolve |
|---|---|---|
| GROUND FAULT | There is a  general ground fault on the DAA other than at a Digital Audio Port (DAP) or Auxiliary input (A or B). | Locate and fix the ground fault. |
| AC FAIL | Loss of AC power.<br>**Note:** When AC power is lost, the DAA does not broadcast non-emergency backup tones. | Investigate whether there is an AC power loss, or whether the DAA-PS is correctly installed and wired. |
| BATTERY | The power supply's battery voltage is too high or too low. | Check the batteries for problems. Replace batteries if necessary. |
| EXTERNAL RAM ERROR | The external RAM test failed on the DAA. | Call Technical Services. |

| System Trouble | Description | To Resolve |
|---|---|---|
| PROGRAM CORRUPTED | The database that houses the DAA programming is corrupt. | The database must be re-downloaded, or all programming must be cleared and re-entered. If the trouble still does not clear, call Technical Services. |
| FLASH IMAGE ERROR | The DAA software is corrupt. | Re-download the panel code software from VeriFire Tools. |
| CHARGER FAIL | The battery charger is not functioning. | Investigate and correct the charger problem. |
| LOADING...NO SERVICE | A program or database download is in progress. The DAA is NOT providing fire protection communication during the download. | Proper authorities should be notified while a download is in progress so that other means of fire protection can be supplied, if necessary. |
| NVRAM BATT TROUBLE | Battery backup is low. | Replace the battery. |
| SELF TEST FAILED | Diagnostic test failed. | Call Technical Services. |
| GROUND FAULT PORT x | A ground fault has occurred on Digital Audio Port (DAP) x. Wire versions only. | Locate the ground fault and repair. |
| DAA ADDRESS CONFLICT | More than one DAA has the same address. | Re-address DAA(s). |
| AMPLIFIER LIMIT | The DAA is overloaded. | Remove outputs to lower the load on the speaker circuits. Press reset when done. |
| AMPLIFIER SUPERVISION | The amplifier's internal supervision is not working. | Call Technical Services. |
| AUXIN TROUBLE | This trouble will be generated when the auxiliary input is supervised (as determined by VeriFire Tools programming) and insufficient signal is detected on the input. | Check the wiring and source. |
| DIGIN TROUBLE | The DAA has determined that the JDVC has stopped transmitting audio data to the Digital Audio Loop (DAL), even though the loop is still functional. | Update code, ensure all code on the Digital Audio Loop is compatible. If the JDVC still does not transmit digital audio data, call Technical Services. |
| FFT TROUBLE | There is a short or open on the FFT riser. | Check that the 4-wire switch is correctly set and that there is and end-of-line resistor in place for 2-wire operation. |
| DAP PORT x FAILURE | Digital Audio Port x (A or B), wire or fiber, is not communicating due to a break in the connection, a short, or faulty hardware. | Locate and fix the break or short. If the problem is not a short or break, call Technical Services. |
| POWER SUPPLY TROUBLE | There is a communication failure with the DAA onboard power supply. | Service is required. |
| | | |
| **Speaker Trouble** | **Description** | **To Resolve** |
| SHORT on x | There is a short on speaker circuit x. | Locate the short and fix. |
| OPEN on x | There is an open on speaker circuit x. | Locate the open and fix. |

**Table 8.2  DAA Troubles**

# 8.6  Read/Alter Status

A JNCA-2, IFC2-3030and IFW, as well as a computer running VeriFire Tools and connected to the NUP port of the JDVC, will be able to read the status of a DAA and its speaker circuits. Refer to the appropriate panel manual or the VeriFire Tools Read Status Service Form.

# Section 9: DAA Battery Calculations

| Description | Column A Amps in Standby | | | Column B Amps in Alarm | | |
|---|---|---|---|---|---|---|
| | QTY | X current draw = | Total | QTY | X current draw = | Total |
| DAA* | 1 | X [ 0.350A ] = | 0.350A | 1 | X [ 0.600A ] = | 0.600A |
| Speakers: | | | | | | |
| 1/4 watt | | | | [    ] | X [ 0.016A ] = | |
| 1/2 watt | | | | [    ] | X [ 0.032A ] = | |
| 3/4 watt | | | | [    ] | X [ 0.0485A ] = | |
| 1 watt | | | | [    ] | X [ 0.064A ] = | |
| 2 watt | | | | [    ] | X [ 0.132A ] = | |
| Other _____ | [    ] | X [        ] = | | [    ] | X [        ] = | |
| | | Total Column A | _____ | | Total Column B | _____ |
| * Includes FFT Riser Draw | | | | | | |

**Table 9.1  Current Draw Calculations Per DAA**

**NOTE:**  Battery Sharing - When batteries are shared by two or more DAAs, Table 9.1 must be completed for each DAA. The totals for Columns A and Columns B must be summed and entered into Table 9.2 where indicated.

| Load Totals | | Multiplied By | Time | | Equals | Secondary Amp Hour Totals | |
|---|---|---|---|---|---|---|---|
| Enter total from Column A in Table 9.1. (Standby Load) | [    ] | X | Required Secondary Non-fire Alarm Standby Time (24 or 60 hours) | [    ] | = | [    ] | Non-fire Alarm Secondary Standby Amp Hours |
| Enter total from Column B in Table 9.1. (Alarm Load) | [    ] | X | Required Fire Alarm Time in Decimal Form* | [    ] | = | [    ] | Secondary Fire Alarm Amp Hour Requirement |
| Sum column for Total Secondary Ampere Hours (AH) Calculated | | | | | = | | |
| Multiply by the derating factor   X 1.2 | | | | | = | [        ] | Total Secondary Ampere Hours Required |

*Following are decimal conversions for standard numbers of minutes:

5 minutes      0.084
10 minutes     0.167
15 minutes     0.250
30 minutes     0.50
60 minutes     1.0

Standby operating times:
• NFPA 72 Local, Proprietary, Auxiliary, Remote Station, and Central Station systems require 24 hours of standby power followed by 5 minutes in alarm.
• Some jurisdictions require 60 hours of standby power followed by 5 minutes in alarm for Auxiliary and Remote Station systems, based on previous NFPA 72 requirements.
• 24 hours of standby/supervisory condition followed by 2 hours of alarm.

**Table 9.2  Secondary Power Standby and Fire Alarm Load**

| Battery Size | Voltage Rating | Required Number | Model Number |
|:---:|:---:|:---:|:---:|
| 12 AH | 12 volts | Two | BAT-12120 |
| 26 AH | 12 volts | Two | BAT-12260 |
| 55 AH | 12 volts | Two | BAT-12550 |

**Table 9.3  Battery Size Requirements**

**Notes**

**Notes**

# Glossary

## A

**All Call** Paging to audio outputs mapped to the DVC-KD ALL CALL button, or to a user-programmable DVC-KD button with its function set to ALL CALL.

## C

**Control Module** An addressable module that a) switches power to a Style Y or Style Z NAC, or b) functions as a Form-C control relay.

**Control-by-Event** A software function that provides a means to program a variety of output responses based on various initiating events. Networked CBE is sometimes referred to as CCBE (Cooperative Control-by-Event).

## D

**DAL (Digital Audio Loop)** Comprised of a DVC, DAAs, and the wire or fiber between them connected at the digital audio ports.

**DCC (Display and Control Center)** A display location, programmed to participate in DCC, when it has control of Acknowledge, Signal Silence, System Reset, Drill, and network paging functions.

## F

**FFT** Firefighter's telephone.

## H

**High Quality Audio** 44.1 kHz sampling rate, 16 bit PCM, mono.

## L

**Logic Equation** Programmed expression of initiating events that provides the means to trigger various output events. A logic zone consists of a logic equation.

## M

**Message Segment** A .wav file used to create an audio message sequence for alert, evacuation, or other messages. The .wav is either provided by the sound library supplied with VeriFire Tools or created by the user.

**Message Sequence** An audio message sequence comprised of at least one audio message segment and the commands to govern its broadcast.

## N

**Node** Equipment that connects to Noti-Fire-Net and communicates with other equipment using that network may be referred to as a node. The minimum hardware requirement for Noti•Fire•Net is two nodes connected via wire or fiber optic cable.

**Noti-Fire-Net** A series of modules and products which allow a group of Fire Alarm Control Panels (FACPs) and other control equipment to connect, forming a true peer-to-peer network.

## P

**PAM point** Address of the intersection between an audio input and output in the Prioritized Audio Matrix. When a PAM point is activated the input will broadcast on its outputs.

**Prioritized Audio Matrix (PAM)** Database section of the DVC programmed to link prioritized audio inputs to audio outputs.

## S

**SPECIAL PAGING FUNCTIONS** Paging to audio outputs mapped to the PAGE ACTIVE EVAC AREAS, PAGE ACTIVE ALERT AREAS, and PAGE INACTIVE AREAS buttons on the DVC-KD.

**Standard Quality Audio** 11.025 kHz sampling rate, 8 bit μ-law, mono.

## V

**VeriFire Tools** A software program utility for uploading and downloading system programming and databases between a personal computer and the control panel through compatible ports.

# Index

**JOHNSON CONTROLS**